American Druggist

Vol. XVI. No. 7. NEW YORK, JULY, 1887. Whole No. 157.

A NEW LABORATORY TROMP.

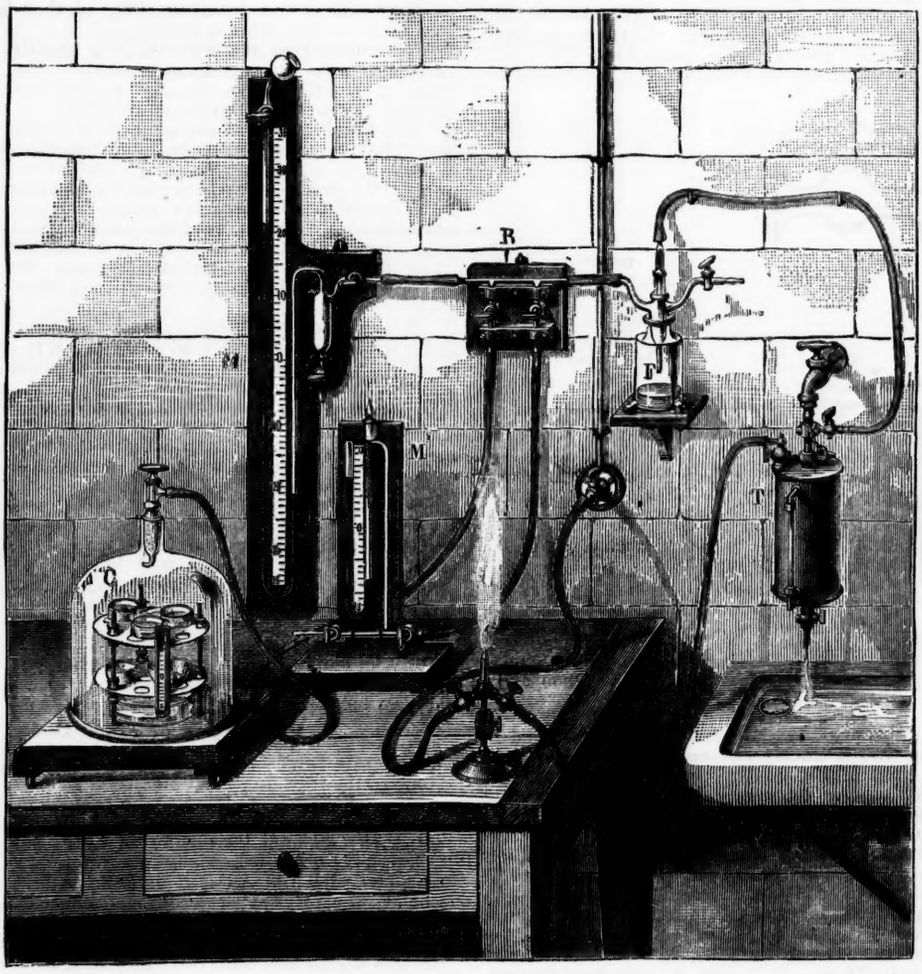
THE suction apparatus formerly used in laboratories consisted of a bottle from which water was allowed to flow, and which had the inconvenience of being cumbersome. For obtaining a vacuum, recourse was had to the air pump—a costly apparatus; and for forcing air into the blow-pipe, the device used was a bellows operated by foot. All this is now replaced by the suction and force tromp, which merely requires to be connected with the faucet of a water pipe. With this remarkable apparatus, one has nothing to do now but open and regulate two cocks in order to obtain a continuous supply of air under pressure. The apparatus is shown in its entirety at T in Fig. 1, where are also shown some of its applications. In the first place, it communicates with a safety bottle, F, which is provided above with a valve to prevent the water from entering the vacuum apparatus—an event that would occur should the pressure of the water happen to diminish suddenly in the pipes. R is a board to which are affixed two glass cocks, forming a double T. This arrangement permits of obtaining a vacuum in two different directions. M is a pressure gauge that shows the degree of the vacuum produced in the various apparatus. M′ is a pressure gauge that can be moved from place to place. These two instruments are so constructed that they can be easily filled and cleaned, and their scales are detachable. C is a bell glass with polished edges, and which is provided at the top with a polished glass cock. It rests upon a base which has been polished with emery, and which is cemented to a metallic frame supported by four legs. This bell glass covers a stand upon which capsules or vessels containing extracts may be placed. Under the lower shelf of this stand is placed a vessel containing sulphuric acid. The degree of vacuum is ascertained through a small manometer.

In the foreground may be seen the gas burner that the tromp converts into a blow-pipe when air is forced into it. It only remains now to explain the mode of operation of the apparatus. The tromp is based upon the principle of the Giffard injector, and was devised in 1872 by Mr. Lane, a pupil of Deville's. Shortly after that period, the brothers Alvergniat put the first models of the apparatus into the market, and the use of them has now become general in laboratories.

The tromp, which is made of glass, consists of two conical nozzles, A and B, arranged as shown in the diagram in Fig. 2. The water enters through the faucet, R, passes from cone A into cone B, as in the injector, and, on making its exit, carries along with it the air that it has sucked in at T. The water that flows out at E is thus mixed with air. The suction of the tube, T, is very strong, and, upon putting the tube in communication with a bell glass, it is possible to obtain a maximum vacuum, which varies in winter and summer according to the tension of the aqueous vapor.

The apparatus may be made of metal. Mr. Alvergniat, in his new apparatus, has connected the two cones at G (2, Fig. 2), and left but one aperture, H, or two apertures, as shown in Fig. 3, which represents one of the metallic tromps at *t t′*. The tube through which the water flows is prolonged in a metallic cylinder, G. If the lower cock, D′, be nearly closed, a certain quantity of water will accumulate in the cylinder and compress the air therein, and the latter will escape under pressure through the cock at the top. It is possible to obtain a pressure of 0.10 m. of mercury. The discharge of compressed air is regulated through the cock, D′.

This exceedingly practical apparatus is destined to render valuable services to physiologists, botanists, and all laboratories of science.—*La Nature*, and *Sci. Amer.*



Alvergniat's laboratory tromp (see also next page).

Collodion Coating for Pills.—Bernbeck, a German pharmacist, recommends the use of collodion as a coating for pills which are intended to be soluble in the intestinal contents. Flexible collodion is to be used, and the pill must be absolutely dry.

Irish Moss as a Substitute for Gum Acacia in Pharmacy.

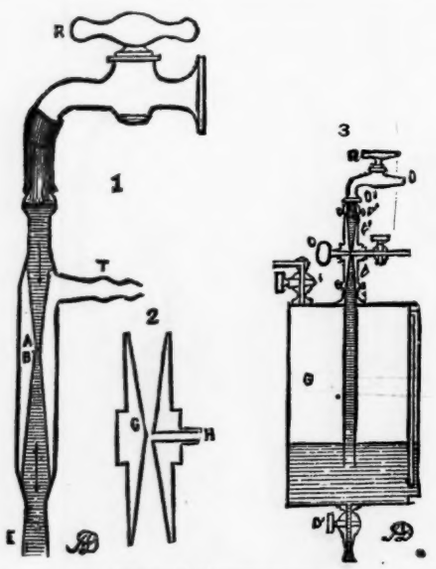
AT the present time, when the price of gum arabic is about five times what used to be considered its normal value, it seems not inappropriate to introduce for consideration a subject such as I have to bring before you. A mucilage of Irish moss, prepared by boiling in water, has been largely used in America for the emulsification of cod-liver oil, but so far as I have been able to ascertain by liberal reference to journals published in that country and in this, its more extended pharmaceutical use has not been proposed.

The only two British species of algæ which yield a mucilaginous jelly with water are *Gelidium corneum* and *Chondrus crispus*, or Irish moss. The latter is the more plentiful, and being a well-known article of commerce is easily obtainable. The composition of commercial Irish moss is given by Church as—

Water	18.8
Albuminoids	9.4
Mucilage	55.4
Cellulose	2.2
Mineral Matter	14.2
	100.0

Stanford says it yielded him 63.7 per cent of carragheenin, or vegetable jelly; this probably includes the albuminoids and mucilage given in Church's analysis.

The mucilage may be obtained by boiling, by heating on a water-bath, and by cold maceration. The usual method is boiling. However, having put a quantity of the moss into water to soak one afternoon, and being unable to attend to it till the next day, I found when I examined it that the water was distinctly viscous. By putting a large quantity of moss into a smaller quantity of water, and macerating with occasional gentle stirring for twenty-four hours, I obtained a mucilage of about three-fourths the viscosity of acacia mucilage.



Alvergniat's laboratory tromp.

At the commencement I encountered a difficulty which threatened to be a serious objection. I found it exceedingly troublesome to get the mucilage clear, the insoluble particles suspended in it being so minute that the straining medium necessary to exclude them required to be so fine that the mucilage would scarcely pass through it. MR. Huested [NEW REMEDIES, July, 1881, p. 194] records similar experience. In a case where the small particles in suspension would not be objectionable, a fairly presentable product may be obtained by using muslin or calico as the straining material, and gently stirring or pressing. For emulsions this serves admirably. In a clear mixture, however, the particles become objectionably evident when the mucilage is diluted. To obtain a clear preparation, Mr. Huested recommends that the mucilage while hot should be poured into a flannel filtering-bag and allowed to drain through, no pressure or stirring being employed. Proceeding in a similar way I failed to get satisfactory results. I could neither get the mucilage to run through reasonably rapidly nor obtain it so clear as I desired. It may be that Mr. Huested's manipulation is superior to mine, or his mucilage was not so clear as that which I have now succeeded in preparing. After many failures, the details of which I need not give, I found that by using a hot-water funnel and straining the mucilage through absorbent cotton wool supported on muslin, a preparation clear enough for all but exceptional purposes could be obtained with comparatively little difficulty. If a perfectly water-clear preparation be required, it may be obtained by making a weak mucilage, filtering it clear, and then evaporating to the thickness required. If a clear jelly were wanted this would be the only way to prepare it, because a decoction of this consistence could not be strained, even when kept hot, in anything like a reasonable time, if at all.

A quarter of an ounce of moss, washed free from dust and sand, soaked in 24 oz. of cold water for an hour or so, boiled gently for five minutes or heated on a water-bath for double the time, and strained in the manner I have described, yields about 18 oz. of mucilage closely resembling in appearance and viscosity the acacia preparation, and possessing as little taste.

I have observed that the clear mucilage has less flavor than that which has not been freed from insoluble particles.

A quarter of an ounce macerated in 4 oz. of cold water for twenty-four hours, or longer, gives a mucilage such as that to which I have already made reference.

Comparing the moss mucilage with acacia mucilage in combinations, I find that it serves as well as the latter for chalk mixture. Guaiac mixture made with it does not so soon acquire a greenish tinge as that made with acacia; oxidation appears to be retarded and presumably the moss is therefore to be preferred. For suspending copaiba it is superior to acacia, separation taking place much more slowly and less completely. Part of the copaiba remains in an emulsified state at the bottom of the bottle when moss is used, but with acacia the liquid in the lower part of the bottle is free from anything of that kind; all the oleoresin having risen to the top.

For emulsifying cod-liver oil it is greatly superior to acacia in point of preventing separation, but a finer division of the oil can be obtained by the use of acacia in greater proportion than the equivalent.

Moss mucilage, ʒ vi., cod liver-oil, ℥ i., and water ℥ ij., produce an emulsion that is practically inseparable. Using ʒ vi. acacia mucilage, ℥ i. cod liver-oil, and ℥ ij. water, the product obtained quickly separates.

It should not be used for suspending heavy powders without some caution, for I find that when it is employed to suspend subnitrate of bismuth, the bismuth when once it settles down will not again shake up. Where there is no objection of this kind it is superior to ordinary mucilage.

In regard to compatibility, moss mucilage forms a clear jelly with subacetate of lead solution; it is miscible with rectified spirit and dilute nitric acid; perchloride of iron gives a slight gelatinous precipitate.

The preparation keeps good for some weeks in full bottles without any preservative. One specimen is shown that has been kept in a partially filled bottle in the front shop for two months and it can hardly be said to be bad; other specimens, however, of about the same age have become mouldy at the top. It does not sour like acacia mucilage.

Pereira says that *Chondrus crispus* has a popular reputation for pulmonary complaints, chronic diarrhœa, and irritation of the kidneys and bladder. The mucilage strikes one as being well suited for use with medicines for any of these complaints; a few ounces of it in a cough mixture, for example. It may be used freely for it is readily digested—the melting point of the jelly being 80° F., not much above that of isinglass jelly used for invalids. —PETER BOA, *in the Pharm. Jour.*

Purification of Fixed Oils.

MR. D. B. DOTT suggests the following method of purifying or decolorizing fixed oils (such as are used in preparation of ointments, etc.) as one which will give very good results in some cases. The commercial oil is agitated with about $\frac{1}{20}$ its volume of a 10% solution of permanganate of potassium. Dilute sulphuric acid is then added and the mixture well shaken. After the water has settled on standing, the oil is decanted and filtered. As a result it will have greatly improved in appearance and will have undergone no apparent deterioration. The process works best with olive and almond oils, but is less successful with linseed oil.—*Pharm. Jour.*

Liquefied Ozone.

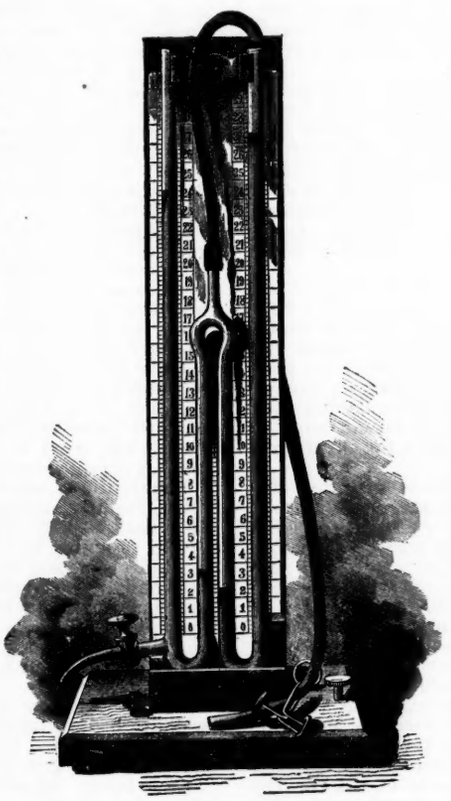
K. OLSZEWSKI has succeeded in preparing liquid ozone by exposing it to the temperature of oxygen boiling under the ordinary pressure of the atmosphere (—181.4° C.). Two tubes were arranged so that the outer one contained liquefied oxygen gas. While the latter was allowed to return to the gaseous condition by exposure to air, which resulted in the reduction of the temperature to that mentioned above, oxygen gas containing ozone was passed through the inner tube. The ozone was thereby condensed, while the oxygen escaped as gas. In thin layers, liquefied ozone is transparent, in somewhat thicker layers (2 mm.) almost opaque. Its color is a dark blue. A small drop of liquefied ozone, contained in a sealed tube, which does not decompose either at its boiling point or at the ordinary temperature, is converted at the latter into a bluish gas, which returns to a dark blue liquid when the tube is immersed into liquefied olefiant gas.—*Monatsch. f. Chem.* 8, 69.

APPARATUS FOR DETERMINING THE SPECIFIC GRAVITY OF LIQUIDS.

IT may be said that reliable determinations of specific gravity have, as a rule, involved the use of a delicate balance. This condition has prevented accuracy in cases where no balance was obtainable, or where its use was inadmissible. The great family of hydrometers of Baumé, Twaddell, Nicholson, and others, are far from exact, but have been devised to meet this want—an accurate method not requiring a balance.

The hydrometer is, for several reasons, an unsatisfactory instrument. Its accuracy depends on the invariable volume of a solid. If made of metal, it may become indented, and so destroyed. If made of glass, unless allowed to stand for a long time before graduation, its volume may slowly change. Such alteration of cubic contents is often observed in thermometers. From this cause one radical defect attaches to the system. To make them sensitive, the stem on which the graduations are marked has to be of small diameter, and, consequently, of great length in proportion to the range of its scale. Accordingly, to cover the cases of liquids of varying specific gravity, to which branch of the subject these notes are especially directed, several hydrometers are found necessary. Capillarity introduces another source of error. In the same liquid the same hydrometer will give different readings, according to the way it is manipulated. The liquid adhering to its stem, where it emerges from the surface, pulls it down to a greater or less extent. If the hydrometer is pressed down and allowed to rise slowly, it will give a lower reading than if just allowed to settle to a position of rest. In different liquids the error of capillarity is still more serious, and cannot be avoided or allowed for. Finally, as a mere matter of practice, it is impossible to read the instrument with any accuracy, the intersection of the liquid surface with the hydrometer stem not defining a sharp line.

The apparatus here illustrated obviates these objections. It gives a definite reading. One apparatus can be used for liquids of all specific gravities, and errors due to capillarity are completely avoided. It is based on the law of the pressure of liquids, which states that the height of two columns of fluid that are in equilibrium is inversely proportioned to their specific gravity. This principle was the basis of Dulong and Petit's method for determining the co-efficient of the absolute expansion of mercury.



Apparatus for determining the specific gravity of liquids.

A glass tube is bent into the shape indicated, and provided with a nozzle at the central bend for the attachment of an India-rubber tube. A pinch cock is used to close the latter. As shown in the cut, one of the lower bends is provided with an outlet cock, also of glass. This may be omitted, as it is only a matter of convenience and neatness, enabling the manipulator to more easily change the fluid where several determinations are to be made in succession. The tube should be about 12 millimeters (½ inch) internal diameter. In height it need not exceed 400 millimeters (16 inches), though for accurate work it should be two or three times as high. This applies to the long members. The central portion should be a little more than half as high.

The tube is mounted on a stand provided with a leveling screw. Back of it is a mirror, which should be of good quality, free from striæ or bubbles. The tube lies snugly against this. On the mirror a scale is marked for all four members of the tubing. The graduation must be executed with the greatest accuracy. The lines must lie all in one direction, parallel to each other, and those on one side should be continuations of those on the others. If this condition is departed from, at the very least the scales for the short and long tube on either side must be identical in level as far as the short one extends. The scale need not be etched or engraved on the mirror. It may be marked upon the front of the tube.

To determine the specific gravity of a liquid, water is first poured into the right-hand tube, until the short tube is filled nearly to the bend. The apparatus is now levelled with the leveling screw seen passing through the base, the water being used as the gauge.

In reading the height of the columns, the eye is so placed that the division of the scale nearest to the water level bisects the reflection of the retina in the mirror. The level of the water can then be read off within a small fraction of a millimeter. The fluid to be tested is poured into the left-hand tube, in about equal quantity. By blowing into the rubber tube, the water and other fluid are forced down the center tubes and up in the outer. When the inner columns have sunk nearly to the bottom of the tube, the rubber tube is closed by a pinch cock. The pinch cock is best applied close to the glass nozzle. Upper and lower readings for both liquids are taken, just as in a siphon barometer. The lower readings are subtracted from the upper ones, giving the true and relative heights of the supporting columns. The height of the water column is divided by that of the other column, and the quotient is the specific gravity.

The best method of levelling the apparatus is to first pour water into both sides, to force it upward as described, and take regular readings and adjust the levelling screw by these observations.

The different capillarity of various liquids does not affect the observations, as the surfaces counteract each other's effects. There is no trouble in reading within one or two tenths of a millimeter, so that in an apparatus a meter high the readings would be within two ten-thousandths, and the quotient expressive of specific gravity of course much closer. As the same water will answer for a series of observations, no cock need be supplied for drawing it off. For extremely accurate work, a rather large diameter of tube should be fixed upon (20 mm. or ¾ inch), and the tubes should be made long. As above suggested, a meter (39.37 inches) effectual height would be sufficient for any work, especially if the readings were taken with a cathetometer.—T. O'Connor Sloane, Ph.D., in the *Scientific American*.

Artificial Coloring of Wines.

AT a recent meeting of the Paris Pharmaceutical Society, M. Portes spoke on a new material sold by dealers for coloring wines. They call it *couleur introuvable* because they claim chemists cannot detect it, owing to its singular property of turning green upon the addition of alkalies, just as natural wine does. The coloring stuff is very puzzling, it seems, because it is composed of three materials—namely, indigo blue, tropæoline yellow, and sulpho-fuchsine. As sulpho-fuchsine is bleached at once by the action of alkalies, it follows that when these reagents are added the blue and yellow only remain, which form the green hue observed. The fraud is very ingenious, and M. Portes had some trouble in isolating the three components of the dye stuff. He succeeded by dissolving out the tropæoline with boiling amylic alcohol, the sulpho-fuchsine with boiling ethylic alcohol, and the indigo with water. The mixture is a most excellent imitation of the natural color of wine, as this really consists of red, yellow, and blue in unequal proportions. It must be admitted that neither of the components of the stuff is poisonous. But French law makes no distinction, and punishes all dealers and manufactures of wine colorings. Hence it behooves pharmacists to keep on their guard, and to refuse to have anything to do with these people, and to beware of their misrepresentations as to the actual provisions of the law. In regard to the detection of the fraud in question, the usual peroxide method still remains the best. In consists in agitating the suspected wine with an equal weight of finely powdered peroxide of manganese and filtering. The sulpho-fuchsine is easily detected in the filtrate by the ordinary chemical tests, the readiest of which is its immediate bleaching by the addition of ammonia. Of course the test in legal cases must be confirmed by others. With some American wines, very rich in coloring matter, it is found sometimes necessary to dilute the wines with an equal quantity of water before adding the peroxide, but then the test works satisfactory.—*Chem. and Drugg.*

Maranham Copaiba Trade.—The Maranham copaiba trade is gradually being usurped by the United Sates, at the expense of Great Britain. From 1883 to 1884, 63 tons went to England, and 2½ tons to the States; from 1884 to 1885 the figures were respectively 50 against 22 tons, and from 1885 to 1886, 17 against 17 tons. No other countries apparently receive any balsam directly from Maranham.

Hints on the Culture of Some Officinal Plants.

In No. 10 of Mr. T. Christy's valuable publication on "*New Commercial Plants and Drugs*" we find an interesting paper by Mr. Lewis Castle relating to the cultivation of medicinal plants, from which we abstract the following:

Aconitum Napellus succeeds on almost any soil that is not very dry, but it prefers a shaded position, thriving under trees or in any similar situation. Division of the roots is the readiest mode of increasing it, as the smallest pieces will grow and make good-sized plants more quickly than from seeds. The latter can, however, be sown in autumn, and the seedlings transplanted in the following spring, allowing a good distance between them, as they grow rapidly. When the plant progresses favorably the roots will be of fair size the second or third year.

Anemone Pulsatilla.—It is advisable to raise the plant from seed sown in August, in pans or pots of light, sandy soil, placed either out of doors or in a cold frame. The young plants can then be transferred in the following spring to their permanent quarters. Select a rather warm position and deep, well-dug soil, light loam being the best, with a good natural drainage, as the plant is very impatient of stagnant moisture, being found in a natural state on open hills in dry soils. The plant may also be increased by subdivision of the roots either in autumn or early spring, the latter being preferable in favorable seasons, though sometimes the flowering is liable to be checked for that season.

Anthemis nobilis.—The plant is perennial, easily grown and easily increased. It succeeds in almost any ordinary soil, and divisions of the plant, or cuttings, placed in a shady position and kept moderately moist, will soon form roots and, when established, can be transferred to their permanent quarters. The flowers are produced in July and August, and if cut in succession as they expand, others will open from time to time; but where many plants are grown it is necessary to cut as many as possible at one time to economize labor.

Aristolochia Serpentaria.—The seeds should be sown under glass, either in a cold frame in autumn or in heat in early spring, employing a light, sandy soil and draining the pots thoroughly. In May the young plants can be placed out of doors, selecting a warm, sheltered position, free from stagnant moisture, but where they are not likely to suffer in hot weather. A slight mulching over the roots after the stems have died or been cut away in autumn will provide a suitable protection for them until the succeeding spring.

Artemisia Absinthium succeeds best in sheltered situations. It is increased by seeds, cuttings, or division of roots, and as the leaves and shoots are used, the chief point is to induce as free growth as possible. By providing a suitable number of young plants to form a succession, the old plants can be destroyed when they are becoming too woody or bare of growth.

Carum Carvi L.—As usually grown this plant is biennial, but it can be rendered an annual, though not with any material advantage from a commercial point of view. It has been cultivated for a considerable period in England where the old practice (now greatly discontinued) was to plough up old pasture land early in March as weather would permit, selecting, by preference, strong loam. On each acre were sown 12 pounds of caraway, 10 pounds of coriander, and 10 pounds of teasel. The coriander was cut in July. The same month in the following year the caraway was fit for cutting, and in the autumn of that year the teasels were harvested. A good mode of treating it is to sow the seed in drills in early autumn or spring, the latter being generally preferable, as the plants have then ample time to become strong before winter. The seedlings should be thinned to 4 or 6 inches apart, if they are strong, and the only subsequent attention needed will be to keep the ground clear of weeds. In harvesting caraway, care must be taken to cut the tops before the seeds or fruits are fully ripe, as they quickly fall and a large portion of the crop will be lost. The stems can be tied in bunches and the seeds threshed out when they have dried sufficiently.

Chimaphila umbellata Nuttall.—This is said by the writer to be a rather difficult plant to grow in England, which he thinks is owing less to clime than to certain deficiencies in the soil. Its natural home is in woods, but not in damp situations, mostly frequenting the drier and higher parts. In England it requires a border of light soil, well drained, and not too exposed to either sun or winds. It can be increased by division, but this operation must be carefully performed or the plant will suffer, as several have found in their eagerness to increase their stock which has resulted in total loss.

Cimicifuga racemosa Elliott can be grown in any ordinary garden soil, but must be allowed plenty of space, and does best in a lightly shaded position. The seeds should be sown in a similar situation as soon as they are ripe.

Citrullus Colocynthis Schrad. is a perennial and is easily increased by sowing seeds in light loam and leaf soil, in moderate heat, and the plants either placed out in beds of rich soil in warm situations, or grown in frames, where the plants will succeed better and ripen their fruits freely. Like most of the *Cucurbitaceæ*, the fruits should, however, be gathered before they are fully ripe. The roots can be easily preserved from year to year, if protected from frost and dampness.

Datura Stramonium L.—A good supply of plants can soon be secured by sowing the seeds under glass and planting out in May. In good soil they will grow rapidly and produce their fruits and seeds before autumn. The seeds can also be sown out of doors when all danger of frost is past, and in ordinarily favorable seasons these, too, will afford plenty of fruits and seeds before the end of the season. The soil should be well dug, and whether the seed is sown outside or the seedlings reared in houses and transplanted, they are better in rows, allowing good space between them. In dry weather supplies of water will be found beneficial, as, being a rapidly growing plant, it soon exhausts the soil.

Delphinium Staphisagria L.—Although a native of Southern Europe, it survives ordinary winters in England in warm districts and sheltered situations and a little protection in less favored places will make it safe, a hand light being the best, though a slight mulching of some light material will commonly answer. The seeds can be sown in a bed or border of light soil in autumn, where the plant can safely be left out during the winter; otherwise the seeds may be sown in pans placed in a cold frame, and the seedlings be transplanted in the spring. They succeed best when undisturbed, and usually produce their flowers and seeds in the following summer and autumn. If sown under glass early in the spring, and then planted out immediately when the weather is fine enough, they will flower the same season, as they will also do in suitable situations if sown out of doors.

Ecballium Elaterium A. Rich.—The root is large and fleshy, with long, trailing stems, and small, oval fruits that, when at maturity, burst and cast out the seeds with considerable force. In consequence of this peculiarity, the plants must be looked over carefully and the fruits gathered before they are fully ripe. As in the case of Colocynth, the seeds may be sown under glass early in the season and subsequently planted out, or in light, warm soil in the open ground, when all danger of frost is past. In rich soil the plants grow rapidly during the summer, producing fruits abundantly. The roots may usually be left safely in the ground with the protection of a thick covering of cocoanut-fibre, refuse, fern fronds, leaf soil, or anything of similar character. The roots will last for several years, but a fresh stock can be raised from seeds every season, if desirable, as when once the plant is obtained seeds will be plentiful.

Foeniculum capillaceum Gilib.—An easily-grown plant, requiring no special treatment, succeeding well in good garden soil. Sow the seeds in autumn or April, in drills, thinning the seedlings out slightly. Keep the ground clean, and in hot, dry weather supply water occasionally, if convenient. It is usually treated as a biennial, making its growth the first year, flowering and seeding the second, when the crop can be harvested the same way as caraway, *q. v.*

Helleborus niger L.—It is not difficult to cultivate, for, although a native of mountainous districts in several countries of Europe, it succeeds in almost any soil that is well drained. Planted in good loam, rather moist, or in shaded situations, it grows luxuriantly, forming thick, knotted roots and abundant foliage. Where the soil is not too heavy, an annual dressing of light manure or leaf soil is beneficial to the growth, and is especially useful for encouraging young plants; but any rank manure should be avoided, and the older plants will be better without it if they are grown for their roots alone. A good mulching of leaf soil is the safest application, but in ordinary garden soil even that can be dispensed with. The plants should be placed in rows when a large number is grown, and they can then be lifted as required. Dividing the roots in autumn and replanting the divisions in a similar way, is the best mode of increasing it.

Hydrastis canadensis L.—The plant thrives in a moist, shaded position, in light vegetable soil, and can be increased either by division of the roots or by seeds.

Hyoscyamus niger L.—The biennial variety is chiefly valued for medicinal purposes. Owing to its possession of large, fleshy roots which strike deeply into the soil, the ground must be well dug and prepared for the plant, a dressing of old, not rank, manure being advantageous. The seeds can be sown in autumn, in drills, and the seedlings thinned out freely the following spring. During this first season the roots and basal leaves are formed, but in the following year the stems and flowers are produced, and the medicinal qualities of the plant are most developed. By sowing each season a succession can be had, so that a certain quantity of the crop can be taken every summer and autumn.

Inula Helenium L.—The plant can be increased by seeds sown out of doors in autumn in prepared beds, and the young seedlings transplanted the following year to their permanent quarters, allowing 12 to 14 inches between the plants, which should be placed in rows for convenience. A quicker way is to obtain offsets from the roots with buds attached, and insert these in rows like cuttings, to be transplanted when roots are formed and growth advancing. In either case the roots can be lifted

for use the second year, as they progress rapidly in good loamy soils.

Lappa major GAERTNER.—The growth is rapid and the roots form seedling plants from seeds sown in autumn are fit for lifting the following season.

Mentha arvensis must be propagated from root-sets or cuttings, and care be taken to watch the beds, to see that no seedlings take root; for if they do they must be cut out or the whole bed will be spoiled. A small-leaved mint springs up (from seed it is supposed); hence the necessity for carefully watching the plants when cutting the stems for distillation. When land can be spared, the rows ought to be 3½ feet apart.

Pimpinella Anisum L.—Chiefly grown in warm districts of Europe, and requiring, in England, well-drained soil in a sheltered position. Seeds can be sown in April and a crop obtained in August in favorable weather. It can be treated in matter of soil and cultivation like fennel and caraway.

Podophyllum peltatum L.—It is not difficult to grow, but requires a moist, light soil, or preferably a peat border, where moderate shade can be provided by neighboring shrubs. It can easily be increased by division of the roots, which may be transplanted in rows; but it is a good plan to reserve a few plants especially for propagation, so that it will not be necessary to disturb the general stock frequently, or until the roots are large enough for commercial purposes. Its thick and fibrous roots are collected, in America, in August, and dried.

Polygala Senega L.—It is not difficult to grow, but requires some protection in winter, a light mulching over the roots being sufficient in the south of England, but in cold, exposed places a hand-light would be the safest means of preserving them. Ordinary garden soil suits it, provided there be suitable drainage. The best way is to obtain roots for stock, but increase will be slow, as division must be practised very carefully.

Spigelia marilandica L. is a perennial, with fibrous roots, and requires a deep, moist bed of peat, or a light soil composed largely of leaf mould or vegetable refuse, to secure success. It is impatient of any rank decaying material, and though it can be increased by division, the process is a slow one.

Valeriana officinalis L. is generally found in rather dry situations, attaining a height of 2 to 3 feet, but under cultivation, especially in shaded, moist positions, and rich soil, it becomes stronger. When grown for medicinal qualities it is not, however, desirable to have it too strong, as in a smaller state, in drier and poorer soils, it is found that its qualities are more powerful and concentrated. The roots have long, fleshy fibres, and the plant can be increased by division, either in spring or autumn, one or two season's growth rendering them fit for lifting, which should be done in autumn.

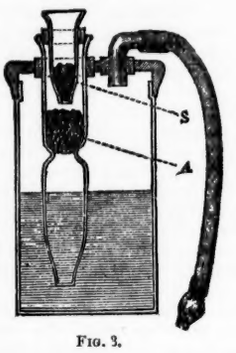


FIG. 3.

Veratrum album L.—The plant requires a rich and deeply-worked soil, and in suitable position it grows very luxuriantly; being readily propagated either by seed or division. The seeds may be sown in the open ground in autumn, thinning the seedlings freely, and transplant them in the following spring, allowing ample space for development, as their large leaves require plenty of room. For quicker increase, dividing the plants is a better method, planting the divisions in autumn; and if good-sized pieces are taken, they will form roots large enough in two or three years' time. The seedlings require three or four years to attain similar size.

In commenting upon the above paper, Mr. Christy says that the following averages may prove useful in estimating the probable yield of dried produce from a given quantity of green material. Roots loose $\frac{5}{7}$ of their weight; barks, $\frac{3}{5}$; leaves, $\frac{3}{4}$; and flowers $\frac{6}{10}$.

Ethereal Solution of Tannin of syrupy consistency is the latest remedy for burns. It is said to soothe pain immediately and the evaporation of the ether leaves a pliable, non-elastic coating which is superior to collodion.

APPARATUS FOR FORMING CHLORATE OF AMMONIUM VAPOR.

THERE seems to be a fashion in England just at present, of using nascent muriate of ammonia by inhalation as a remedy for nasal and laryngeal catarrh, if we may judge from the appearance of a variety of modifications of the apparatus in the columns and advertising pages of our exchanges. As the construction of an apparatus for this purpose is a very simple affair, we reproduce some of the illustrations referred to, as well as of one which we have often made out of the materials to be had in every drug store, and suggest that a little attention given to this subject, and the expenditure of a little time and materials, may be found profitable.

The form shown in Figure 1 was long ago proposed by Lewin and still remains the most practical and available. With the aid of three glass flasks, or even ordinary bottles with large mouths (like quinine bottles for the smaller and a one half-pound salt-mouth for the large one) a few feet of glass tubing and a few inches of rubber tubing, it can be quickly made by any person accustomed to laboratory manipulations. One of the small flasks contains a small quantity of strong water of ammonia, the other has in it an equal amount of strong hydrochloric acid. Into the large flask should be placed some rose-water. Upon holding the mouth piece of the rubber tube in the lips, and taking a deep inspiration so as to *draw* air through the apparatus, the air passes down the straight tubes into the small flasks, bubbles up through their contents, passes into the large flask by means of the bent connecting-tubes, and carries with it the vapors of ammonia and acid. These vapors are washed by passing through the rose-water, and in the space in the large flask, above the rose-water, they mix in the form of a white, smoke-like cloud of muriate of ammonia, and from thence are drawn into the air-passages by means of the rubber tube. It is best to make the stoppers of rubber and to stand the three flasks on a plate or lacquered wooden tray to facilitate handling them.

FIG. 2.
Muriate of ammonia apparatus.

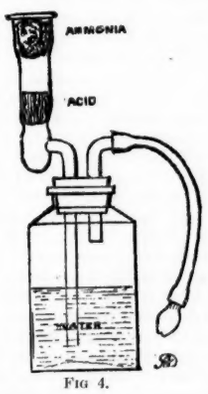


FIG 4.

Allen and Hanbury advertise the form of apparatus of which Figure 2 is a diagram.

The inhaler consists of a glass jar, fitted with a cap, to which are attached the charge tubes and the inhaling tube. The charge tubes are two; one, larger in diameter than the other, having the contraction which forms a holder for the acid plug, A, and the smaller one contained within it which holds the sponge for the ammonia. When required for use, the jar is half filled with cold water; the pumice plug is saturated with hydrochloric acid and inserted in its place in the large tube; the sponge is charged with solution of ammonia, and inserted in its holder within the large tube and above the acid plug. The inhaler is then ready for use, and inhalation is carried on by drawing the vapor through the water by gentle inspiration into the mouth. The mouth-piece is so shaped that it can be used either for oral or for nasal inhalation.

Hawksley offers another modification, shown in Figure 3, the principle of which is the same; and still another form, known as Basdon's, is the one represented by Figure 4. In the latter, the *cul-de-sac* at the lower extremity of the tube containing the chemicals is intended to receive any acid that may drip from the plug of pumice stone.

Substitutes for Collodion.—The *London Medical Record* contains the following formula, which has been used to prepare a calming and adhesive preparation suitable for neuralgias, or tender, inflamed, or abraded surfaces. Bits of linen or silk dipped into it answer the same purpose as the so-called "court plaster": Mastic 3 iij., balsam Peru 3 i., narcotine 3 vi., chloroform 3 vi. The three first subtances must be powdered separately, and then added to the chloroform.

Standardized Preparations of Belladonna.

THE advances made in the methods of estimating alkaloids and other active principles during the last few years will render it possible to introduce into the pharmacopœias that will appear hereafter quite a series of preparations of active drugs, made to contain known quantities of the active ingredients. Up to the present time, this has been found feasible only in the case of preparations of opium, cinchona, and nux vomica.

In a recent paper by Prof. Dunstan and Mr. Francis Ransom, read before the Pharm. Society (*Pharm. Journ.* April 16th), the authors submitted the details of the application of this method to the preparations of *belladonna*. Of the first portion of the paper we can only give an abstract.

In a general way, the following five questions present themselves in a case of this kind:

1. How may the active principle be accurately estimated in the drug?
2. What is the best solvent to extract the active constituent?
3. What part of the plant is best used?
4. What physical condition of the preparation is most compatible with the production of a standard preparation?
5. How may the quantity of active principle be best estimated in the preparation?

Regarding *belladonna*, the authors refer to their published results regarding the best methods of estimating the alkaloids atropine and hyoscyamine, both in the crude drug as well as in the preparations. They also show that the *root* of belladonna is preferable to the leaves, not because of any material difference in proportion of alkaloids, but on account of the lesser difficulty to separate them. In fact, they propose to drop the use of the leaves entirely and use the root for all the preparations.

[Note by ED. AM. DRUGG.—We agree with the authors in principle, but are inclined to believe that it would be great wastefulness to throw away belladonna leaves altogether and to use the root alone. Already the supplies of belladonna root are beginning to fall behind the demand, a very large quantity being required alone by the manufacturers of atropine. Were the demand to increase much more, it is certain that the supplies would become inadequate, particularly as the roots should not be collected until the plants are several years old. If manufacturers of Extract of Belladonna Leaves were to adopt the plan to assay the extract prepared on a large scale—which may be done best on a sample of a large batch—and to sell the same under a guaranty of the strength stated on the label, this would to some extent help over the difficulty. Of course, it would be necessary to control the correctness of the assay in case of doubt.]

Regarding the solvent, the authors clearly demonstrate that alcohol of 0.887 spec. grav. (or of 71 per cent by volume) should be used to extract the alkaloids.

The authors then proceed to give the details of the preparation in the following manner:

Preparation of the Standard Extract.—In deciding on the kind of extract which shall be taken as the standard, we have been largely guided by questions of practical convenience. There are two physical conditions of an extract in which it is feasible to standardize it, the semi-solid extract and the dry extract. In the case of nux vomica, there is not sufficient difference in the alkaloidal content and in the ratio of alkaloidal salt to extractive matter, in good commercial specimens, to prevent the competent pharmacist from preparing and dispensing a reliable standard extract. With belladonna the case is different, since so far as we have been able to ascertain, the ratio of extractive to alkaloid is subject to considerable variation, and although in case of need it would no doubt be possible to standardize the conventional extract, yet we think, on the whole, that a dry extract will be more convenient for general adoption. Before such a proposal can be accepted, it must be shown that the alkaloidal salts of belladonna (principally malates) are not affected by the heat necessary for evaporation to dryness. Two specimens of the ordinary extract, which contains about 18 per cent of water, were prepared, and the quantity of atropine and hyoscyamine estimated in each. They were then evaporated over a water-bath until they ceased to lose weight. From the dry extracts exactly the same amount of alkaloid was isolated as from the semi solid extract, showing that the alkaloidal salts are not decomposed at 100° C. From a consideration of the average strength of the present extract, we propose that 2 per cent of atropine and hyoscyamine shall be taken as the standard quantity. No good specimen of belladonna extract by the suggested solvent will ever yield a dry extract which contains less than 2 per cent of alkaloids. Generally the strength of the dry extract prepared according to the method now proposed will be between 3 per cent as a minimum, and 5 per cent as a maximum. To reduce these extracts to the standard strength of 2 per cent, we suggest that a sufficient quantity of powdered milk-sugar should be added. The dry residue is always hygroscopic, but when thoroughly evaporated with powdered milk-sugar it may be kept in a properly closed bottle without any appreciable deterioration in strength. Since this extract is wholly soluble in water, or in the mixture of spirit and water with the aid of which it was prepared, all the preparations of belladonna might be produced from it as a starting-point. Or, if it is thought that any advantage is to be gained, the tincture and liniment might be made by diluting the strong percolate which is obtained during the preparation of this extract, as one of us has before suggested for tincture of nux vomica; the other suggested alternative, namely, the solution of a definite quantity of the standard extract being, however, we think with justice, adopted in the British Pharmacopœia. Any modification in detail might be adopted by manufacturers on the large scale, since the directions of the Pharmacopœia are mainly intended for the production of relatively small quantities. It is proposed that the tincture shall contain 0.034 per cent of the alkaloid, that is, it will be sixty times weaker than the extract, or will contain almost exactly three-twentieths of a grain of alkaloid in one fluidounce, and the liniment it is proposed shall contain 0.2 per cent of alkaloid. A standard plaster might also be prepared from the standard extract. [The weights and measures mentioned in the following formulæ are British, avoirdupois weight and imperial measure.]

Standard Extract of Belladonna.

Take of—

Belladonna Root in No. 20 powder.	1 pound.
Rectified Spirit (sp. gr. 0.838)...	48 fluidounces.
Distilled Water..... 12	fluidounces.

Mix the spirit with the water. Macerate the belladonna in 2 pints of this mixture for forty-eight hours, agitating occasionally; then transfer to a percolator, and when the fluid ceases to pass, continue the percolation with the remainder of the diluted spirit. Afterwards subject the contents of the percolator to pressure, filter the product, mix the liquids, and measure the exact volume of the mixture (*a*). Estimate the alkaloidal nature of the solution by the following method.

Evaporate 50 cubic centimeters of the liquid over a water-bath with a gentle heat, until all the alcohol is dispelled. Dissolve the extract thus obtained in about 5 cubic centimeters of warm distilled water, acidulated with a few drops of diluted hydrochloric acid; filter, if necessary, through a small fragment of cotton wool; pour into a stoppered glass separator, and add ammonia until the solution is distinctly alkaline. Agitate for a few minutes with 5 cubic centimeters of chloroform, separate, and again wash the aqueous liquid with 3 cubic centimeters of chloroform. Agitate the mixed chloroformic solutions with 5 cubic centimeters of diluted hydrochloric acid, separate, again wash with 3 cubic centimeters of the diluted acid, mix the acid solutions, render alkaline with ammonia, and agitate with 5 cubic centimeters of chloroform. After separation, wash the alkaline solution with 3 cubic centimeters of chloroform, mix the chloroformic solutions, evaporate in a dish of known weight and dry the residue, which should be nearly colorless at a temperature of 200° F. (93° C.). The weight of the residue thus obtained multiplied by two will give the parts by weight of the alkaloids in 100 fluid parts of the liquid. The exact volume of this liquid being known and the strength having been thus ascertained, calculate the total amount of alkaloid present therein.

Evaporate to dryness over a water-bath, and add sufficient sugar of milk to make the mixed product exactly fifty times the weight of the total alkaloid found to have been present in the liquid (*a*), allowing for that quantity which was used for the estimation. Mix intimately, powder as quickly as possible in a dry atmosphere, and transfer at once to a well-stoppered bottle. This extract will contain 2 per cent of total alkaloid.

Liniment of Belladonna.

Take of—

Standard Extract of Belladonna.....	3 ounces.
Camphor.....	1 ounce.
Rectified Spirit (sp. gr. .0838).....	24 fluidounces.
Distilled Water.....	6 fluidounces.

Dissolve the camphor in the spirit and the extract in the slightly warmed water. When cold mix the two solutions, allow any undissolved sugar of milk present to subside, and pour off the clear liquor, which should measure 30 fluidounces. One hundred fluid grains of this liniment contain $\frac{1}{5}$ grain of total alkaloids, that is, 2 per cent of atropine and hyoscyamine.

Tincture of Belladonna.

Take of—

Standard Extract of Belladonna....	...148 grains.
Distilled Water.....	4 fl. oz.
Rectified Spirit.....	a sufficiency.

Dissolve the extract in the warm water and then add sufficient spirit to produce 20 fl. oz. Allow any undissolved sugar of milk to subside and decant the clear solution. One fluidounce of this tincture contains $\frac{3}{50}$ grain of total alkaloid. One hundred cubic centimeters evaporated to dryness on the water-bath will leave a residue containing 0.034 gr. of atropine and hyoscyamine, these alkaloids to be isolated by the process previously prescribed.

PREPARATION OF CHLORINE GAS.

For the preparation of chlorine gas, the usual methods employed do not permit the apparatus arranged for its production to deliver definite quantities of the gas at will; that is, when the process is once started, it is not easy to interrupt it and to cause it to begin again at a subsequent time. This difficulty has now been overcome by Prof. Clemens Winkler, who has hit upon the idea of preparing chloride of lime in form of pressed cubes, which are used as sources of the gas.

Chloride of lime, when treated with dilute hydrochloric acid, gives off chlorine gas even at ordinary temperature, but, owing to the pulverulent condition of the salt, the gas is at first given out in a rush, which soon ceases. It could only be regulated by allowing the acid to flow very slowly upon the chloride of lime.

Yet, if the chloride is compressed into hard pieces, with the intervention of a suitable binding agent, the evolution of chlorine gas may be regulated as easily as that of carbonic acid gas from marble. Among all the substances tried for this purpose, the only one so far found suitable is burned gypsum, or plaster of Paris. The pieces are made in the following manner:

Dry chloride of lime, of best quality, is intimately mixed with one-fourth of its weight of plaster of Paris, and the mass moistened with cold water so as to produce a damp, friable mass which can be made into lumps, between the fingers, only with difficulty. Addition of more water is to avoided. By pounding the mass for a short time in an iron mortar, it acquires the necessary degree of homogeneity. It is then forced into a square iron frame about 10 to 15 Mm. ($\frac{2}{5}$ to $\frac{3}{5}$ inch) high by means of a flat-headed iron hammer, until it is heaped full, after which a rubber plate is put upon it and subjected to a powerful pressure. The finished, square cake, while still in the frame, is then cut into cubes, the latter pressed out from the frame upon a wooden or tinned-iron support, and dried as rapidly as possible at a temperature not exceeding 20° C. The cubes are then transferred to well-closed bottles.

The most suitable apparatus for generating chlorine gas from these cubes is the well-known hydro-sulphuric acid apparatus of Kipp provided with a ground glass stop-cock. Any other kind of apparatus working on the same principle will answer. For instance, that devised by Süss (New Rem., 1877, 331) in which the solid from which the gas is to be generated is packed into the neck *b*, the liquid being made to come in contact with it by simply turning the globular vessel on its side. It is charged with hydrochloric, acid of sp. gr. 1.124, previously diluted with an equal volume of water. The acid need not be chemically pure, but it should not contain any sulphuric acid, as this would cause the crystallization of gypsum. The gypsum used as binding agent causes no disturbance: in proportion as the chloride of lime is dissolved, it separates as a dense powder and collects at the bottom of the apparatus. The generation of chlorine gas may be regulated at will and can be interrupted at any time by closing the glass stop-cock.

H. Trommsdorff, of Erfurt, has undertaken the manufacture of the compressed chloride of lime. It can be obtained through dealers in chemical apparatus.—After *Ber. d. Deutsch. Chem. Ges.*, 1887, 184.

A New Method of Separating the Different Alkaloids of Opium.

Prof. P. C. Plugge communicates a new method of separating the more important alkaloids of opium, when they are present either together or in groups of two or more.

Supposing a solution is at hand containing narcotine, papaverine, narceine, thebaine, codeine, and morphine, it is found that these alkaloids may be separated in groups by the successive action of the following precipitants: acetate of sodium, ferricyanide of potassium, salicylate of sodium, sulphocyanide of potassium, and ammonia.

The first reagent to apply is *acetate of sodium*. This does not precipitate morphine, codeine or thebaine, and narceine only if the solution contains more than $\frac{1}{6}$ per cent. But it precipitates *papaverine* and *narcotine*, even from very dilute solutions, as *free* alkaloids.

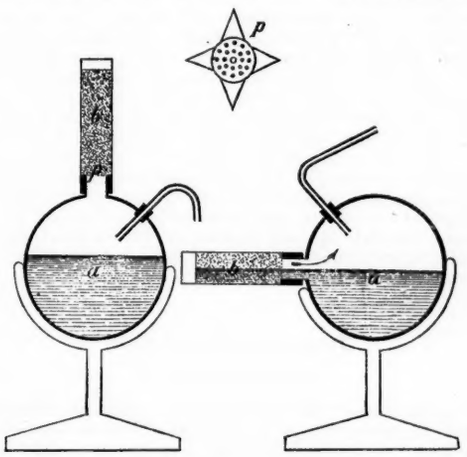
These two alkaloids may afterwards be separated as follows: Dilute their solution so that it will contain only $\frac{1}{4}$ per cent or less of alkaloid, and add a solution of ferricyanide of potassium. This precipitates only papaverine. If this is filtered off after 24 hours, the narcotine may be obtained from the filtrate by precipitation with ammonia. The papaverine is separated from the precipitate above obtained by digesting with dilute solution of soda or ammonia, transferring to a filter and washing, first with alkaline and then with pure water. Should it not be pure enough yet, it is dissolved in dilute hydrochloric acid and reprecipitated by ammonia.

After the separation of papaverine and narcotine, there remains a filtrate containing the other opium alkaloids, as well as the excess of the acetate of sodium.

The solution is first evaporated on a water-bath until the proportion of narceine amounts to more than $\frac{1}{6}$ per cent of the solution. [This will have to be ascertained by successive cooling of the solution until crystals form, and by a qualitative examination of the latter. If narceine is recognized, then the weight of the whole solution and crystals is noted, the whole well mixed and stirred together, an aliquot small portion, representing a true proportion of liquid and crystals, separated, filtered, and the crystals on the filter dried. This will give an approximate idea what the total weight of the crystals of narceine is, corresponding to the weight of the total liquid; hence it will be easy, after returning the separated portion of liquid and crystals, to continue the evaporation until the narceine amounts to more than $\frac{1}{6}$ per cent of the weight of the liquid.—Ed. Am. Dr.] The narceine having been allowed to crystallize out—which is rendered more complete by an increased concentration of the liquid—it is separated by filtration, and is, after washing, obtained as pure alkaloid.

The filtrate now contains thebaine, codeine, and morphine. On adding salicylate of sodium, only the thebaine is precipitated—at least 91 per cent of it. If the precipitate is filtered off after 48 hours, the pure alkaloid may be extracted from the precipitate by digesting in very dilute solution of soda or ammonia, then washed on a filter first with alkaline and then with pure water.

The next operation required is the removal of the remainder of acetate and salicylate of sodium, and the fractions of narceine and thebaine still present. Of these substances, all but the acetic acid must be removed before the codeine and morphine can be separated. For this purpose, the solution is mixed with diluted hydrochloric acid, the separated salicylic acid removed after a short time, and the acid filtrate transferred to a separator, shaken with chloroform which takes up, not only the still remaining trace of salicylic acid, but also the rest of the narceine and thebaine. Codeine and morphine do not pass over at all, or but very slightly, into



Süss gas generator.

the chloroform from the acid solution. It is usually stated that narceine and thebaine are extracted only with great difficulty by shaking their acid solution with a solvent. Prof. Plugge, however, points out that no difficulty is encountered if chloroform is used, and free acetic acid is present, which is the case here, since the added hydrochloric acid has liberated acetic acid from the acetate of potassium.

The final liquid, having been freed from chloroform by gentle warming, and containing codeine and morphine, is now treated with sulpho-cyanide of potassium. Plugge found that a solution of morphine containing as much as four per cent yields no precipitate with this reagent, while a solution of codeine of this strength is precipitated at once, and even more dilute solutions are precipitated after a while. Solutions of 1:200 when ice cold are rendered turbid by separated crystals already after a few minutes; such of 1:600 after 24 to 48 hours. If the solution of the two alkaloids is sufficiently concentrated, almost the whole of the codeine may thus be separated. From the final filtrate obtained, the whole of the morphine originally present is now to be extracted. It is only necessary to add a small but sufficient quantity of ammonia and to set the beaker aside for a while. The morphine will gradually separate in crystals, while the small amount of codeine still present will remain in solution. The sulpho-cyanide reagent is not effective enough to be used for a quantitative estimation of the codeine; but at least seventy per cent of this alkaloid may be separated, so that the subsequent precipitation of morphine by ammonia is not interfered with. The residual solution, if evaporated, yields the remainder of the codeine, which is naturally contaminated with a considerable quantity of morphine that had been retained in solution. If the morphine is to be extracted as much as possible from the liquid remaining after its precipitation through ammonia, it may be obtained by being shaken out with amylic alcohol.—After *Arch. d. Pharm.*, 1887, 343.

Oil Emulsions without a Mortar.

E. KRAFT recommends a simple method for preparing the so-called *Emulsio* or *Emulsio oleosa*, which forms a frequent constituent of the prescriptions of continental practitioners and is always prepared with oil of sweet almonds, unless another oil is expressly directed. These emulsions are always directed to be prepared in a mortar, which not only consumes some time, but is also accompanied by loss, as it is not practicable to transfer the whole of the contents of the mortar to the dispensing vial. The method recommended by Kraft consists in this, that the emulsion is prepared directly in the vial in which it is to be dispensed. For instance, if Expressed Oil of Almonds, 10 parts, is to be made into 100 parts of emulsion, proceed as follows:

First pour 7.5 Gm. of water into the vial; then the 10 Gm. of oil of almonds, and next 5 Gm. of best gum arabic in very fine powder, and shake energetically. After a while add gradually the remainder of the water. The resulting emulsion will be faultless.—*Pharm. Zeit.*

Note on Pepsin.

SOME recent experiments by M. Sundberg (*L'Union Pharm.* April, p. 145) appear to throw considerable doubt on the ordinary assumption that pepsin is of an albuminoid nature. The most superficial layer of gastric mucus was scraped from calves' stomachs, triturated with sodium chloride, and sufficient water added to make a saturated solution which, after standing two days, was submitted to dialysis to remove the sodium chloride. The solution of pepsin so obtained, though it possessed considerable digestive power, contained only traces of albuminoid matter; but in order to purify it further, the acidulated solution was kept for several days at a temperature of 40° C., after which calcium chloride and sodium phosphate were added and it was neutralized with very dilute ammonia. The precipitation had to be repeated two or three times to bring down all the pepsin, which was then washed, dissolved in a little 5 per cent hydrochloric acid, and the solution dialyzed. The solution after the removal of the salts was very active, but it no longer gave any of the reactions for albuminoid matter, yielding no precipitate with either neutral or basic lead acetate or platinum perchloride. Five or six volumes of absolute alcohol, however, caused the formation of a slight precipitate which, with acidulated water, gave a very active solution.—*L'Union Pharm.* and *Pharm. Jour.*

Notes on Essential Oils.

(Continued from page 103.)

Oil of Geranium (*Rose-Geranium*).—The so-called Turkish oil of geranium will gradually lose its appellation "Turkish," which is becoming a misnomer. In view of the importance which this article has acquired, its passage through several hands, by way of Cairo and Constantinople, could naturally not be of long duration. At present, direct connections have been formed with India, its home of production. The so-called geranium or rûsa grass (*Andropogon Schœnanthus*) grows in immense quantities in Central India and the Northwestern Provinces. The oil distilled from this grass furnishes not only the fine geranium or palma-rosa oil, but also the ordinary so-called gingergrass oil. Yet in what relation these two oils stand to each other has so far not been determined. On the other hand, it is possible that the inferior oil is produced by diluting the original with oil of turpentine. Or, perhaps a special fraction of the oil of less agreeable odor is separately collected and sold as gingergrass oil.

The Indian geranium oil, *rûsa-ka tel* or "oil of Namur," was found by Stenhouse to be a mixture of a pure ethereal oil and a liquid resin, the latter undoubtedly produced by oxidation of the oil.

Most of the oil is now shipped by way of Trieste and London, the former route by way of Constantinople being gradually abandoned.

Oil of Orris.—This very delicate substance is easily injured by heat; hence it is distilled at as low a temperature as possible. 1,000 parts of orris root are required to produce 1 part of the oil (consisting really of a large proportion of myristic acid mixed with a minute fraction of the true essential oil). The attempts so far made to distil such oils in vacuo have not been successful.

Oil of Crisp Mint.—The German supply of this oil was soon exhausted, but the deficiency has been made up by American oil. [It is hoped that some attention will be paid in the United States to this oil, which forms an agreeable intermediary product between the oils of peppermint and spearmint. Formerly, American oil of crisp mint was reported to be largely adulterated with oil of turpentine, sassafras, etc. It is more than doubtful whether this was ever done by the distillers. There is no difficulty in obtaining the pure oil.]

Oil Lavender.—Regarding Mitcham oil of lavender, Schimmel & Co. state that it does not find a large market in Germany, "and quite properly so, since a like effect may be produced with really fine French oil and a little talent in mixing, at a much lower price."

Nearest to English oil of lavender in quality is the Spanish, but even this is only in slight demand.

Oil of Lemongrass.—The export of this oil from Ceylon has greatly diminished, being only 5,882 oz. in 1886. The largest part of the annual supply is furnished by India and the Malay Peninsula. The plant (*Andropogon citratus*, D. C.) is a coarse, hard grass, growing also in the West Indies. It thrives in a light soil, but requires much moisture.

Oil of Limetta.—The special attention of perfumers is called by Schimmel & Co. to the exquisite quality of the Montserrat hand-pressed oil, differing altogether from the often semi-rancid article formerly met with in the market.

Oil of Linaloe should never be used fresh, but should be allowed to age for a year or more. The difference in aroma thus produced is as great as that existing between fresh and old oil of lavender.

The principal consumption of this oil is in the preparation of the so-called lily-of-the-valley extract.

Oil of Myrtle.—The ordinary French commercial oil has found two rivals, one being a Spanish, the other a Corsican product, which are far superior to the first-mentioned. Particularly the last is very fine.

Myrtol is that portion of oil of myrtle which boils between 320°-338° F. Some time ago it has been recommended as a remedy in bronchial catarrh and similar affections of mucous membranes, but it is doubtful whether it will maintain the reputation.

Oil of Balsam of Peru is gradually replacing Balsam of Peru itself in perfumery, as it does not darken the color of the product.

The residue left after the essential oil or cinnamein has been distilled off from the balsam still has a faint odor. Schimmel & Co. explain that the distillate nevertheless represents practically the whole of the aromatic principle.

Oil of Peppermint.—We quote here what Sch. & Co. say about the Japanese oil: it remains to be seen whether Japan will continue to produce on the same scale as heretofore. If this is the case, and care is taken to constantly improve the product by proper cultivation, the Japanese oil will undoubtedly curtail the consumption of the American oil. For all internal purposes, such as liquors, confectionery, and the finer cosmetics, the pure American oil will, of course, always be preferred, as the Japanese product has a bitter after-taste which makes it unsuitable for internal use. All efforts which have been made by a certain firm in Japan to deny this fact have been demonstrated as useless by the unwillingness of purchasers to buy it for such purposes in spite of its ridiculously low price. On the other hand, it seems to us (Sch. & Co.) more rational to attempt the discovery and isolation of the body which imparts to the oil its bitter taste, and we believe to have closely approximated the solution of this problem. We regard the menthon ($C_{10}H_{18}O$) as the disagreeable accompaniment in the oil, and will probably be able, in our next report, to make some statements regarding it.

Oil of Rhodium.—The oil known by this name in commerce is a compound of different ethereal oils, among them oil of rose. Owing to the long period since genuine rose-wood oil has disappeared from the drug trade, and also owing to periodical "improvements," the compound now known as "oil of rhodium" has entirely lost its resemblance to the original. Sch. & Co. had occasion to observe this more especially after a small invoice of the genuine rose-wood, from *Convolvulus Scoparius L.*, had reached their hands probably from the Canary Islands. Unfortunately, this lot contains only a small amount of roots, which are the chief source of the oil; hence they could only obtain a small amount as a specimen for the present. This oil has a handsome, golden-yellow color, a very agreeable rose-like odor, and congeals, like oil of rose, already at 12° C. (ab. 54° F.) to needle-shaped crystals.

Oil of Rose (*Turkish*).—In spite of the political disturbances in Bulgaria, the price of oil of rose has rather declined than advanced. To a large extent this is due to the fact that only a very small fraction of the oil reaches the market in its pure condition, the remainder being more or less adulterated, in consequence of which the favor of the public and of the consumers has tended towards the natural substitute, viz., oil of rose-geranium. This is likely to be much more the case in the future, unless the producers realize the necessity of abandoning the ruinous principle of sophistication.

Oil of Sandalwood, East Indian.—Sandalwood trees are public property in India, and only such as have reached an age of 18 to 25 years are allowed to be felled, upon the approval of the Indian Forestry Department. The felling takes place near the end of the year; the trunks are deprived of bark, cut into logs, and then assorted according to quality. These logs constitute the sandalwood of commerce and are sold by auction to the dealers who convene from all parts of India. The finest sandalwood is obtained from the dark, ripe heart-wood. If the oil obtained from such wood is allowed to age a few years, its aroma attains a surprising fulness and sweetness.

An inferior and cheaper oil is furnished by the sandal-

wood grown in the Dutch East Indies, the chief market for which is Macassar.

Oil of Sandalwood, West Indian.—The use of this variety is steadily diminishing, the East-Indian oil being gradually substituted for it.

Oil of Wintergreen, Synthetic.—Schimmel & Co. take occasion to criticise the one-sided statements that have been made, even in American journals, regarding this product, some of them being made perhaps under a bias or prejudice in favor of the natural oil, which is not supported by facts. The opinion which we have previously advanced on several occasions—entirely unsolicited, of course, and solely based upon our own independent observation—that the synthetic oil, being an absolutely homogeneous chemical individual or unit, free from accompanying impurities such as are naturally inherent in the natural oil, will eventually take the place of the latter, is therefore likely to become true. We can state that the synthetic oil has been used for some time medicinally with the best results in the place of the natural oil.

Oil of Ylang is being produced in much larger quantities than formerly, but there are now several inferior grades offered, of which it is difficult to understand how they can find purchasers. The Dutch East Indies and Siam have also begun to put the oil on the market, but its quality is inferior to the best Manilla brands. Sch. & Co. deal exclusively in the product of Pablo Sartorius (of Manila), which they have always regarded as the finest brand of the market.

Oil of Asarum Europæum.—A new product. The roots yield 1.08 per cent of ethereal oil containing a large amount of Asarum-camphor (or *asaron*), which partly separates already at ordinary temperature.

Oil of Water-Avens.—The root of *Geum urbanum* yields an essential oil of very fine and aromatic cinnamon-like odor, from which crystals separate on standing. It appears to be worthy of practical employment.

Oils of Kiku Leaves and Flowers.—Japan has sent samples of two new essential oils, prepared respectively from the leaves and the flowers of kiku, regarding the use of which nothing is known so far, at least in European literature. Schimmel & Co. state that they will be able to communicate the botanical name of the plant from which they are obtained in their next report.

[The large Japanese botanical cyclopædia, "Sô-moku-zussets" of Iinuma Yokussai, of which one of us possesses a copy, contains a number of plants bearing the name *kiku* in composition; for instance: *Kiku-mugura* = *Galium triflorum* Michx; *Kiku-ozami* = *Saussurea ussuriensis* Max, etc. The term *kiku* alone is applied to *Pyrethrum chinense* Sabin, which we presume to be the plant from which these oils are derived (*Sô-moku-zussets*, vol. 17, plate 15).]

Eucalyptol, pure.—The recent employment of eucalyptol in French hospitals as a remedy in consumption, applied hypodermically, has made the production of a purer article desirable. It is now prepared in the following manner: Hydrochloric acid gas is conducted into the crude eucalyptol placed in a freezing mixture, whereby it is converted into a crystalline magma, which is pressed, dried, then decomposed with water, and finally rectified, furnishing a product which has a constant boiling point at 176° C., and a spec. grav. of 0.930 at 15° C. When placed in a freezing mixture, it crystallizes in magnificent long needles, melting at −1° C., which may be regarded as a test of purity.

Menthol.—The chief industry in the environs of Yonezawa in the Japanese province of Dewa is the production of menthol and oil of peppermint. After the menthol-cones began to make their appearance in Europe, the production was gradually enlarged, and the price advanced to 8 yen (dollars, silver) per catti (1 lb. 5 oz.) of menthol, and 4 yen per catti of oil. During 1885, however, the price fell 50 to 60 per cent, causing considerable loss. During 1885, about 154 chests were exported, each chest containing 25 lbs. of menthol and 50 lbs. of oil. Twelve months later, the price had fallen 50 per cent further, the enterprise entailing, therefore, considerable loss upon the producers or dealers. The value of oil of peppermint and of menthol exported from Japan amounted to

Yen (dollars)	14,671	in 1882.
" "	13,084	" 1883.
" "	25,787	" 1884.
" "	42,368	" 1885.

The exports in 1886 fell off very greatly, and there is no prospect of any successful resumption of the large export of menthol, *since the problem of the conversion of the liquid oil of peppermint into crystalline menthol has been completely solved*, according to the positive assurance of Schimmel & Co.

Mention is made of the newly proposed "mentholeatum," consisting of a solution of menthol in oleic acid (proposed by Prof. Remington). At the same time, the remark of the editor of the *Pharmaceutische Zeitung* is mentioned who asks whether the "old olive oil is not preferable for this purpose." We would state, *en passant*, that we do not think it would answer as well for this purpose. It is well known that oleic acid is very rapidly *absorbed* by the skin; hence any substance it holds in solution is apt to reach the underlying tissues much more rapidly. Olive oil and all fatty oils are good demulcent *coatings* of the skin, but they are rather repelled by it and probably not absorbed at all.

The report also mentions an ointment for neuralgia which has lately been recommended in American journals and which we will repeat here:

Menthol	45 grains.
Cocaine (alkaloid)	15 "
Chloral	10 "
Vaseline	300 "

Safrol.—An idea of the large consumption of oil of sassafras, or rather the pure safrol, may be gained from the fact that Sch. & Co. produce 1,500 kilos per week. There is no doubt that this will eventually take the place of the natural oil, provided its source, the oil of camphor, remains as accessible hereafter as it has been hitherto.

Specific Gravities.—At the end of their report, Messrs. Schimmel & Co. append a table of specific gravities of essential oils, observed in samples of known origin and purity, which is a valuable contribution to pharmaceutical literature and here reproduced:

Specific Gravities

of some of the principal commercial Volatile Oils observed upon normal Samples of known Purity. Published by Schimmel & Co., of Leipzig.

Oil of	Temperature. 10° C 50° F	15° C 59° F	20° C 68° F	Remarks.
Angelica	0.860	0.858	0.853	
Anise	.....	0.985	0.980	
" extra, Anethol	.....	.....	0.985	At 25° C.—Melts at 21–22° C.
" Star	0.990	0.985	0.980	
Bergamot, best Reggio	0.887	0.883	0.880	
Bitter almond	1.063	1.060	1.055	Average 1.060.
Cajuput, green	0.927	0.925	0.922	
Calamus	0.961	0.959	0 957	
Caraway, *Carvol*	0.967	0.963	0.958	Average 0.962–0.965.
" twice rect. Germ.	0.905	0.900	0.886	
" " " Dutch.	0.911	0.908	0.905	
Cardamom, Ceylon	0.902	0.900	0.897	
Cassia buds	1.058	1.055	1.052	
" rect	1.073	1.068	1.063	Average 1.050–1.060.
Cedarwood	0.948	0.945	0.940	
Cinnamon, Ceylon	1.035	1.030	1.027	
Citronella (East India Oil Melissa)	0.900	0.896	0.893	
Cloves, fr. buds	1.065	1.062	1.059	Average 1.060–1.065.
" " stems	1.065	1.061	1.057	" 1.060–1.065.
Coriander	0.872	0.867	0.864	" 0.860–0.870.
Cubeb	0.918	0.915	0.912	
Cumin	0.925	0.922	0.918	
Dill	0.905	0.900	0.896	
Eucalyptus (globulus)	0.925	0.922	0.918	
" *Eucalyptol*	0.935	0.931	0.928	
Fennel-seed, rect.	0.975	0.970	0.965	Average 0.965–0.975.
Ginger	0.885	0.882	0.878	
Juniper, doubly rect	0.863	0.858	0.855	
Lemon	0.856	0.854	0.851	
Mace	0.858	0.855	0.852	
Mirbane	.....	.....	1.200	
Mustard, genuine	1.030	1.025	1.020	
" artif	1.025	1.020	1.016	
Orange, sweet (Portugal)	0.854	0.850	.....	
Peppermint, F. S. & Co	0.906	0.903	0.901	Average 0.900–0.910.
" Mitcham	0.905	0.900	0.898	" 0.900–0.905.
Sandalwood, best East Ind.	0.978	0.975	0.973	
Sassafras	1.068	1.065	1.060	" 1.050–1.070.
" *Safrol*	1.109	1.104	1.100	
Valerian	0.947	0.945	0.940	
Wintergreen, natural	1.189	1.185	1.182	
" synthetic	1.192	1.187	1.183	

Influence of Form of Administration upon the Action of Remedies.

Iodide of potassium in 5-grain doses given in a half-ounce of water a half-hour before meals will relieve bronchitis in four days, when the same dose in two ounces of water taken after meals fails for weeks to give relief.

Iron given in an effervescent mixture will often rapidly show its good effect in anæmia, when it does no good or positively disagrees in other forms.

Morphine, which in aqueous solution fails to relieve cough, will do so promptly if dissolved in a small amount of viscid menstruum.

Sulphate of Magnesia.—Six or eight drachms given in just as much hot water as will serve to dissolve it, and taken early in the morning with subsequent deprivation of drinks, is of undoubted value in relieving pleural effusion. When given freely diluted it exercises no good effect whatever.

Nux Vomica, Digitalis, Belladonna (and probably other drugs) are more effective when given by mixing the tincture just before administration, with a little water, than when combined in mixtures in which they often are in contact with alkaline salts for days.—Dr. J. Little, in *Dublin Med. Jour.*

THE

American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XVI., No. 7. WHOLE No. 157.

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PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N. Y.

SUBSCRIPTION PRICE per year, - - - - - - - $1.50
SINGLE COPIES, - - - - - - - - - - - .15

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & CO., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed in care of the Publishers.

The AMERICAN DRUGGIST is issued in the latter part of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

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EDITORIAL.

THE term of office of the Board of Pharmacy of the City and County of New York having expired, an election was held on Monday, June 6th, by the members of the College of Pharmacy, which resulted in the choice of the following gentlemen: Dr. William Balser (re-elected), Dr. Cyrus Edson, Dr. George G. Needham (re-elected), Mr. B. F. Hays, and Prof. P. W. Bedford (re-elected). A somewhat animated discussion arose regarding the apparent inactivity and inaggressiveness of the Board as formerly constituted, the impression having commonly prevailed that the Board had not fully performed its duties, as it did not institute proceedings against transgressors. Dr. William Balser, however, the efficient Secretary of the Board for many years past, showed that the condition of things was much more favorable than had been imagined, inasmuch as a pretty close account had been kept of those persons who newly established themselves, and in the majority of instances, these persons presented themselves for examination when called upon. The Board appears to have had more difficulty with graduates of pharmacy than with others. Graduates are entitled to be registered by the Board without further examination. Knowing this fact, and probably surmising that the registration of their names by the Board of Pharmacy is merely a trifling clerical act, they have in a number of instances been very dilatory about it, even so far as to neglect to pay attention to repeated summons by the Board. We desire to advise these gentlemen that they not only expose themselves to the full penalty provided for by the Pharmacy Act, but that shey should give an example of prompt obedience to the law rather than to appear to despise it. The profession looks to the educated members for its main support, and for a dignified representation before the public. Pharmacy laws were established to protect the public against the dangers arising from the incompetency and ignorance of the uneducated interloper. It is, therefore, the bounden duty of those who have the good of their profession at heart—and among these the graduates of our colleges are supposed to occupy the front rank—not only to see the law properly executed by others, but to be themselves obedient to it, promptly and cheerfully.

THERE is no doubt in the minds of those who have studied the question thoroughly, that the present Pharmacy Law of the City and County of New York is not perfect, and needs improvement. It is a pity that we have so many separate pharmacy laws in this State—one for the City and County of New York, one for Kings County, one for Erie County, and a fourth for the remainder of the State. We have not the least doubt that the time is not distant when these separate laws will be wiped from the statute book, and be replaced by one uniform law for the whole State. It must be conceded that had such a law been established in the beginning, it would have entailed injury, either to the population in the large cities, or seriously injured the business of the pharmacists in the small towns and the country. The demands upon the pharmacist in the large cities are such that a comparatively high grade, and in many cases a very high grade, of professional education is absolutely necessary for the satisfactory performance of his duties. In the small towns and in the country, this may not be always so necessary; at least the small amount of purely professional duties that constitutes part of the volume of business of a country pharmacist did not perhaps justify him in engaging the high-priced services of a trained assistant. In compliance with this recognized condition of things, Pharmacy Boards were at first confined to the large cities of New York and Brooklyn. The increasing number of graduates of pharmacy, however, and the more active participation of members of the profession from all sections of the State in the pharmaceutical meetings, has brought about a gradual approximation of the standard of education required of the country pharmacist to that of his confrères in the large cities. Indeed, there are many of the best educated men situated in the country, and a fair count would probably show that the large cities contain about an equal proportion of poorly educated members as may now be still found in the country. These considerations, as well as the successful establishment and working of single pharmacy laws in other States, likewise possessing very large cities, make it pretty certain that the enactment of a single pharmacy law for the whole State of New York is a thing to be brought about in the near future.

THE Editors of the *American Practitioner* very shrewdly inquire just what we are to understand by the statements, so commonly met with in medical journals, that the use of such or such a remedy was attended with "good results."

THE number of pharmaceutical chemists in Great Britain at the close of 1886 was 2,198, and the number of chemists and druggists was 11,249; a total of 13,447. During the year the number registered in both classes diminished by 120.

Stanislaus Limousin, the well-known French pharmacist, died on April 7th, at the age of fifty-five years. He has been connected with many important advances in pharmaceutical practice and literature, but abroad he is probably best known through his wafer capsule apparatus, which has been introduced in every country.

Prof. Victor C. Vaughn is to have charge of the School of Hygiene to be organized in connection with the University of Michigan and under the direction of the State Board of Health.

Boussingault (Jean-Baptiste-Joseph-Dieudonné), the celebrated chemist, died on May 12th, in Paris, his native place. He was born in 1802. After graduating at the St. Etienne School of Mines, he was sent by an English company to South America to reopen old abandoned mines. He was at first successful, and found time to publish observations on tropical phenomena, which attracted much attention, notably on the part of Humboldt, who was then working in the same field. But soon war broke out between Spain and its colonies, and Boussingault was obliged to abandon the enterprise. He joined the staff of Bolivar, the *Libertador*, but remained ever more of a scientist than a soldier, exploring to great advantage Bolivia, Venezuela, and the country situated between Carthagena and the mouths of the Orinoco. Returning to France in 1833, he was appointed a professor of chemistry to the Lyons Faculty of Sciences, and soon was elected to the presidency of the same faculty. In 1839, he was elected to the Academy of Sciences, and accepted the chair of agricultural chemistry at the Paris Conservatory of Arts-et-Métiers. For a while, he wasted his time on politics, during the short-lived Republic of 1848, but soon returned to his favorite study—chemistry. The application of the science to agriculture was the branch he

selected. His more important works bear upon the management of soils, feeding of cattle, analysis of manures, composition of atmospheric air, rural economy, and agricultural and physiological chemistry.

The Wholesale Druggists' Life Insurance Company, recently chartered under the laws of Pennsylvania, is to have its main office in Philadelphia. Robert Shoemaker has been made the president, and Edward H. Hance the secretary. The company will have a guarantee fund of $100,000, and the patronage is limited to wholesale druggists, of which there are estimated to be 650 in the United States. Risks amounting to more than $100,000 were offered at the date of incorporation, and a business of $1,500,000 is expected within the first year. An executive committee of 35 has been appointed, including the 9 directors required by Pennsylvania laws to be residents of that State.

Juries for the coming French Exhibition.—M. Edouard Lockroy, the Minister of Commerce and Industry, appointed, on March 12th, the admission committees for most sections of the International Exposition for 1889.

For Class 45, chemicals and pharmaceuticals, an admission committee of twenty-five members has been appointed, as follows:—Messrs. Armet de Lisle, quinine manufacture; Barbe, dynamite; A. Blouet, glue and oils; de Bonnard (of Coignet & Co.); Senator Léon Chiris, essential oils; Ph. de Clermont, professor; Debray, academician; Felix Dehaynin, expert; D. Gernez, professor; A. Gicquel, pharmacist; C. Guibal, india-rubber; Ernest Hardy, expert; Houet, paints and varnishes; Jules Kolb, chemical manufacturer; Lindet, professor; Linget, glycerin; Nicolas-Victor Masson, military pharmacist; Senator Naquet, chemist, author of the divorce law; E. Péligot, professor; A. Poirrier, aniline colors; Alfred Riche, professor at the College of Pharmacy; Senator Scheurer-Kestner, chemist; Froost, professor; A. Vée, wholesale druggist; Frederic Wurtz, pharmacist, a son of the late Ch. Adolphe Wurtz.

For Class 28, perfumery, the following have been appointed:—Messrs. A. Chouët (firm of Dr. Pierre); Edmond Coudray; Gallet père; Oume Guerlain; Lecarron (firm of Gellé); L'Hôte, expert; Piver; Paul Prot (firm of Lubin) A. Raynaud.—*Chem. and Drugg.*

The Amsterdam Quinine Works.—In the *India Mercury*, some additional particulars are given concerning the future of this concern, which was recently sold by public auction at about £8,400. It is proposed to furnish the works with improved machinery for the extraction of alkaloids from cinchona bark, and thus to increase the producing capacity from 8,000 lbs., the former standard, to 18,000 lbs. per annum. This will entail an outlay of about £2,800. The works will resume operations with a capital of £21,000, of which the public will be invited to contribute £8,500, in shares of 500 florins, or about £42 each. The purchaser of the concern, Mr. W. Sieger, together with a few well-known Amsterdam firms, among which are the Dutch Trading Company, S. B. Zeveryn, A. d'Ailly & Sons, and C. F. Boehringer & Sons, of Mannheim. The latter firm will take over technical management of the new company, and a chemist trained at their Mannheim works has been appointed technical manager of the Amsterdam manufactory.—*Chem. and Drugg.*

The British Pharmacopœia.—In the course of the proceedings of the British General Medical Council, the Pharmacopœia Committee reported that, up to the present time, 22,925 copies of the edition of the [new British] Pharmacopœia of 1885 have been sold. The production of the work, including the first reprint, has cost £3,475 9*s.* 3*d.*, and the amount received has been £4,519 6*s.* 11*d.* Including 75 copies on hand, this leaves a balance to the good of £1,047 17*s.* 8*d.* Another reprint of 3,000 copies from the stereotype plates has been ordered. Dr. Attfield has submitted a first annual report on the Pharmacopœia.—*Chem. and Drugg.*

Harvard's two hundred and fiftieth anniversary and Columbia's one hundredth seem insignificant when we read that the University of Bologna will next spring celebrate the eight hundredth anniversary of its supposed foundation, the exact date of which is not known.

North Carolina Pharmaceutical Association.—The eighth annual meeting of this Association will be held at Asheville on Wednesday, August 3d. Mr. W. C. Carmichael, of Asheville, is the Local Secretary, and Mr. A. W. Rowland, of Wilson, the President.

Massachusetts College of Pharmacy.—At the annual meeting, held Monday, June 6th, the following officers for 1887–'88 were chosen: President, Henry Canning; vice-presidents, Samuel A. D. Sheppard, Ph.G., William C. Durkee, Ph.G.; recording secretary, Charles C. Williams, Ph.G., M.D.; corresponding secretary, William F. Sawyer; treasurer, H. K. Appleton, Jr., Ph.G.; auditor, Linus D. Drury, Ph.G.; trustees, Solomon Carter, E. Waldo Cutler, Benjamin F. Stacey, John G. Godding, Ph.G., George M. Hoyt, Ph.G., Charles A. Siegmund, John G. Benedict, Ph.G., John W. O'Mealey, Ph.G.; actuary, Charles C. Williams, Ph.G., M.D.

American Pharmaceutical Association.—The following programme of entertainment has been arranged by the entertainment committee:

Tuesday evening, September 6th.—Reception and promenade concert at the Grand Hotel, tendered to all visiting members by the druggists of Cincinnati.

Wednesday evening, September 7th.—Vocal and instrumental concert at Music Hall. The great organ, the second in size in the world, may be heard to excellent advantage on this occasion. The concert will be given under the auspices of the "Apollo Club," a trained chorus of 40 male voices.

Thursday evening, September 8th.—Entertainment to be provided for by the committee.

Friday, September 9th.—Carriage drive through the city and suburbs, visiting Eden Park, the West Museum of Art, Walnut Hills, Avondale, Clifton; ending at the Zoological Garden with a banquet.

Visitors desiring to leave for their homes can reach the city in time for early evening trains. Visiting ladies will be entertained by the local committee of ladies, and carriages placed at their disposal during the convention.

Spent Ginger.

We have recently referred to the use of spent ginger as an adulterant of pepper. For some time, it is reported, this useless material has been employed for adulterating ordinary ginger. The diminished pungency is counteracted by soaking the ginger in an infusion of capsicum. The ginger is then put through a drying process, and afterwards ground, but as there are no visible particles of capsicum, the adulteration cannot be detected by the eye, and an analysis, which the purchaser does not care to have made, has to be resorted to. The ginger so prepared is stated to go entirely into the hands of those aërated-water makers who have to meet the demand for a very cheap article. Latterly, however, capsicum itself has been resorted to by many of these manufacturers, and their "ginger" preparations have not a trace of the agreeable flavor of ginger.—*Chem. and Drugg.*

Flavoring Extracts.

Cooks, confectioners, and others engaged in the preparation of food and drinks are in the habit of using various artificial perfumes, which in chemical language are such bodies as amylic valerianate, amylic butyrate, ethylic butyrate, propylic ether, and caprylic alcohol. The odor and flavor of the apple, the pear, the pineapple, the strawberry, and the raspberry can thus be imitated. The imitations not only remove the necessity for the use of the natural fruits, but are less expensive, and, besides having perfect similitude with them, give the appropriate flavor in a more accentuated form.

MM. Poincare and Vallois have sought to ascertain whether these artificially prepared perfumes possess poisonous properties by injecting them under the skin of animals, as well as introducing them into the stomach. Dogs and guinea-pigs can withstand even large doses of these substances when injected under the skin; but these animals can be poisoned by sufficiently large doses, and then the symptoms set in rapidly. The most constant toxic symptom was great prostration, which was followed in a variable time by coma. These phenomena were less marked in the dog than the guinea-pig. All the animals were troubled with violent nasal irritation and sneezing, and distressed breathing was always evidenced by over-action of the respiratory muscles. An excessive secretion of mucus from the bronchial tubes was also noticed. Notwithstanding the gravity of the symptoms, the majority of the animals recovered. The practical outcome of these experiments is to sanction the use of infinitesimal doses, such as are already employed for artificial flavoring of aliments. —*Zymotechnic Magazine.*

[It is worthy of note that in the case of many of these artificial flavors, the resemblance to the natural flavor is greatest in their odor, and that the impression upon the sense of taste is not equally apparent.—Ed. A. D.]

More New Elements.

Alexander Pringle has announced to the British Association the discovery of several new elements in veins contained in quartz of silurian rocks, found on his country seat in the county of Selkirk. One of these elements which is very difficult to separate from various other elements—in fact, it appears to occupy a position between several of the usually recognized analytical groups—has been provisionally called *polymnestum* (Pm). Another, related to iron, has not been named so far. A third, which has the molecular weight 95.4, is black like charcoal, and has been named *erebodium* (Eb). A fourth, having the molecular weight 43.6 or thereabouts, has been called *gadenium*. A fifth, which resembles lead in color and softness, is easily melted, forms yellow and green salts, and otherwise much resembles nickel and cobalt, has remained unnamed so far. Finally, a sixth element, a metalloid of a sunset red metallic lustre and a molecular weight of 43.2, has been called hesperin or *hesperisium* (He). [Why not preferably *hesperium*?—Ed. Am. Dr.]—After *Deutsch. Chem. Zeit.*

Notes on Camphor.*

THE area of distribution of the *Cinnamomum Camphora* is an extensive one, including not only the greater part of China proper, especially the southeastern and eastern littoral, but also the islands of Hainan and Formosa and the southern part of Japan to about 36° northern latitude. But it may be taken for granted that very little, if any, of the camphor produced on the Chinese mainland is ever exported; in fact, there are reasons to believe that the trees have been exterminated in many provinces, and that the Chinese may ere long themselves be entirely dependent upon the foreign article for their home consumption. On the island of Hainan the camphor industry is of very little importance, and from a commercial point of view Formosa and Japan are therefore the only countries which need be taken into account when reviewing the probable future of the article. The Formosa Camphor, which is grayer in color, and generally damper than the Japanese variety, reaches our market in cases of about 1 cwt., and its price is on an average from 2s. to 2s. 6d. per cwt., or say about 4 per cent below that of the Japanese camphor.

The island of Formosa, nominally tributary to China, is inhabited by one of the most savage races on the face of the globe. Various attempts on the part of European nations to obtain a hold on the island have failed, but of late the Chinese have been making a determined and apparently successful attempt to subjugate the country by the practical though by no means easy expedient of exterminating the aborigines by fire and sword. Bands of Chinese from time to time make an excursion into the interior in order to collect camphor (for along the littoral the trees are all but exterminated) and carry the crudely-distilled article to Tamsui, the principal part of the island, where it is packed in tubs and shipped mostly to Hong Kong. Upon its arrival at that port it is repacked into cases and distributed to Europe, America, and various Asian countries.

It appears that formerly some sort of rough control was exercised over the camphor-distilling parties by requiring the collectors to take out a Government license. Quite recently, it seems, camphor distilling has been made a Government monopoly by the Chinese authorities, who are governing the island; and, since the Chinese invasion has been crowned with success, the exports of camphor, which in 1884 and 1885 had dwindled to next to nothing, have again assumed very much larger proportions.

The mountains in the interior of Formosa, especially in the northern part of the island, are still covered with camphor trees, but these are ruthlessly destroyed as the Chinese invasion progresses, and their place is taken by other cultures, such as tea and indigo, which yield a much quicker return. The total extinction of the camphor-laurels in Formosa is therefore, to all appearances, a question of, perhaps, not more than twelve or fifteen years, at the end of which period the Chinese camphor of our markets may have become a thing of the past.

The probable future of the camphor industry in Japan is to some extent a matter of conjecture, as it is difficult to obtain entirely reliable data; but a careful comparison of the information vouchsafed by the most trustworthy sources favors the assumption that in this country also the destruction of camphor laurels has, for some time at least, been proceeding at a much faster pace than the raising of new trees.

Japan now yields about three or four times as much camphor as Formosa. The Japanese provinces of Tosa and Satsuma are the centres of the camphor industry. The product distilled there is taken to the capital of Tosa and shipped to Osaka, where it passes into the hands of European dealers, who export it via Hiogo. Large quantities are also obtained in Kin Sin, the southernmost island of Japan, and brought into commerce partly via Nagasaki, the only port on that island, and partly via Shanghai and Hong Kong, to which ports the camphor is conveyed by native craft.

Danger Attending the Use of Pure Terebene.

DR. HARVEY, of Birmingham, describes in the *British Medical Journal* the case of a man aged 56, a chronic asthmatic, who suffered from the beginning of December with severe bronchitis, with profuse muco-purulent expectoration: "On December 21st, he began to take pure terebene (ten drops on sugar every four hours) with great advantage, the expectoration diminishing to *nil*, and the dyspnœa being much relieved. After the treatment had been continued for three days, the patient was seized with intense pain in the region of the left kidney, shooting into the pelvis and down the left thigh, with blood in the urine and severe strangury. Cessation of the terebene treatment, together with the use of poultices and the administration of opium internally, resulted in speedy relief, and left little doubt that the condition was one of intense renal congestion caused by the terebene."

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* From an editorial article on camphor in the *Chemist and Druggist* (May 21st).

LEVER CORKSCREW.

THE lever corkscrew which is here illustrated is a German contrivance for opening bottles, which is based on the principle of the so-called "lazy tongs," and is very simple. While shut, the corkscrew is firmly screwed into the cork, and traction is then made at the handle. This causes the "tongs" to spread and to press upon the neck of the bottle, at the same time while the screw-portion bearing the cork is lifted by the double leverage. The removal of corks is greatly facilitated by this contrivance, and the bottle is protected against fracture by the simultaneous application of the lever at both sides. The

little apparatus, therefore, fulfils the purpose of removing corks rapidly and safely. Price, 4.50 marks; free of postage, 5 marks. Apply to E. Cohn, Berlin, S. W., Leipzigerstrasse 88.

APPARATUS FOR HEATING FLUIDS USED UNDER PRESSURE.

D. GEORGE E. BREWER, in the *Jour. of Cutaneous and Genito-Urinary Diseases* describes an apparatus which he has used for urethral injections, which might be made available in pharmaceutical processes, as for example, where filtration under pressure requires the liquid to be kept hot. We here reproduce the illustration which requires no explanation. A desirable addition to such an apparatus would be a thermometer with coarse registration.

Tobacco Fungus.—A fungus which is known to affect henbane leaves in Europe, *Peronospora Hyoscyami* DE BARY, has lately been noticed in the leaves of *Nicotiana glauca* in California, and it is feared lest it may spread to the tobacco plantations in the United States (*Nature*, March 31st, p. 321). As this fungus has been found in England, there is a possibility of its spreading to the tobacco cultivated in this country, which grows under conditions less favorable to its vitality than in the United States.—*Pharm. Journ.*

The Therapeutic Value of Oleum Hyoscyami and of other "Olea cocta."

As is well known, the oleum hyoscyami and other "oils" of narcotic herbs are merely olive oil (or some other bland fatty oil) which has been impregnated by heat or other means with whatever constituents were soluble in the oil. Generally more stress has been laid upon the appearance of these preparations than upon their alkaloidal contents, a handsome green color being above all highly prized.

Mr. Dieterich has recently examined some of these products, made by himself with all possible care. Having previously analyzed the extract made from the same hyoscyamus which was utilized in the preparation of the "oleum hyoscyami," and having found this to contain at least 0.75% of hyoscyamine, he ascertained that a corresponding portion of the oil contained only about $\frac{1}{15}$th of this quantity of alkaloid. Before describing his modus operandi in the assay of the oil, we will give a brief abstract of his method of assay of extract of hyoscyamus and of other extracts:

Triturate 0.2 Gm. of powdered lime, made by ignition from marble, with 3 Gm. of water; and mix this well with 2 Gm. of the extract to be examined (assuming it to be either belladonna, conium, aconite, or hyoscyamus). When it is dissolved, add 10 Gm. more of powdered lime, and rub until a dry powder results. By means of a continuous extraction apparatus, extract the mass, packed in a little glass-cylinder, with ether. In the case of belladonna, aconite, and hyoscyamus, the extraction will be completed in about 45 minutes. In the case of conium, at least two hours will be required. To make sure, the extraction with ether ought to be repeated. Transfer the etheral solution to a capsule, rinsing the flask in which it has been contained with ether. Add 1 C.c. of distilled water and evaporate the ether carefully on a water-bath at a temperature not exceeding 30° C. (86° F.), taking care that no vapors of any volatile acid (nitric, hydrochloric acetic, etc., acid) come in contact with it, to prevent even the slightest trace of the respective alkaloids from being neutralized. Dissolve the final residue in 0.5 Gm. of diluted alcohol (sp. gr. 0.892), dilute the solution with 10 C.c. of distilled water, add 1 or 2 drops of rosolic acid solution (1 : 100 alcohol), titrate with $\frac{1}{100}$ normal sulphuric acid—that is, such as contains 0.049 Gm. of H_2SO_4 in 1 liter, or of which 1 C.c. contains 0.00049 Gm. of H_2SO_4.

Each cubic centimeter of this acid neutralizes, respectively, according to the author:

0.00289 Gm. of atropine or hyoscyamine,
0.00523 Gm. of aconitine,
0.00127 Gm. of coniine,

For extract of belladonna, the author had found the results to vary between 1.142 and 1.184 per cent in alkaloids.

Extract of Aconite, between 1.252 and 1.305.
Extract of Conium, 0.589 to 0.622.
Extract of Hyoscyamus, 0.551 to 0.780 per cent.

Coming back now to the Oleum Hyoscyami, we will give the process followed by the author in assaying it.

500 Gm. of the oil were shaken with 4 successive portions of 200 Gm. of alcohol mixed with 4 drops of diluted sulphuric acid. The united liquors were filtered and evaporated on a tared capsule at a gentle heat (not exceeding 60° C. =140° F.) until the residue amounted to 10 Gm. This was mixed with 50 Gm. of water in a test-tube, the mixture well shaken, filtered through a wetted filter, and the residue left behind once more treated in the same manner. The united acid filtrates were again evaporated below 60 C., triturated with two Gm. of powdered lime, afterwards with 10 more Gm. of the same, and the mixture extracted with ether precisely as described in the preceding process. The ethereal extract was evaporated to 1.5 Gm., mixed with 0.5 Gm. of diluted alcohol (0.892), and then with 10 Gm. of water. Next 1 drop of solution of rosolic acid was added, and lastly enough of the $\frac{1}{100}$ sulphuric acid, of which 3.5 C.c. were consumed, which correspond to 0.010115 Gm. of hyoscyamine in the total 500 Gm. of the oil.

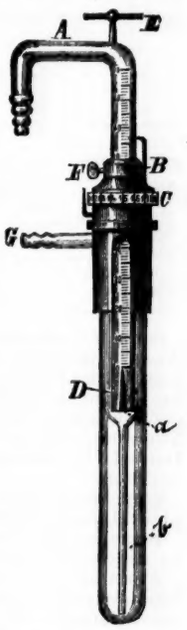
Diederich states correctly that the process followed in making these oils from narcotic herbs is faulty in this, that the alkaloids are not set free from their salts so as to enable them to be dissolved by the oil. He therefore proposes to set the alkaloids free by the use of ammonia, which has the further advantage that it greatly increases the brilliancy of the green chlorophyll color upon which so much weight is laid. He found that this use of ammonia increased the quantity of hyoscyamine contained in the oil to triple the amount present in the ordinary preparation. The process he recommends is as follows:

Mix 20 parts of water of ammonia (sp. gr. 0.960) with 750 parts of alcohol, moisten with it 1,000 parts of coarsely powdered hyoscyamus leaves, firmly press the damp powder in a porcelain vessel, tie parchment paper over it and let it stand 12 hours. Next transfer it to a large porcelain vessel, pour upon it 5,000 parts of olive oil, stir well, and heat it, under occasional stirring, upon a steam bath at a temperature of 50°–60°C. (122°–140° F.). Then express and filter. A higher temperature results in loss of alkaloid.—After *Rundschau* (Prag), No. 17.

AN IMPROVED THERMO-REGULATOR.*

THE most effective and most easily adjusted thermo-regulator so far proposed, appears to be that of Prof. Lothar Meyer, of which we give a description here.

A is the tube through which the gas enters. The inner end of this tube is not contracted, but maintains its diameter to the end, but it has a very acute triangle cut out near the end (as shown by the shaded space *a* in the cut). This triangular opening must be made with the greatest care, the edges perfectly straight and smooth (not sharp) and running to a fine slit at the top, so that the current of gas may be adjusted as delicately as possible. The reserve opening at *D* must be made just small enough to prevent the burner from going out, while it should not, on the other hand, allow so much gas to pass as would sensibly increase the heat. The gas-tube *A* is ground gas-tight into the neck *B*, which is portion of the metallic mounting of the outer tube of the regulator. This outer tube contains, at its lower end, the reservoir of mercury, which fills the space *b* and rises in the narrow funnel-shaped tube, by expansion, until it partly or entirely covers the triangular slit of the gas-tube at *a*. By raising or lowering the gas-tube (*A*), the admission of gas to the burner is regulated. The rough adjustment is made by means of the handle *E*, with which the tube may be raised or lowered in the neck. It is then fastened with the set-screw *F*. The fine adjustment may now be made by turning the micrometer screw *C*, which causes the upper portion of the metallic neck to rise or to descend according as it is turned. As one revolution of the screw causes a rise or depression of the tube by $\frac{1}{2}$ millimeter, and the circumference of the screw is divided into twenty degrees, it follows that the adjustment may be brought to $\frac{1}{40}$ millimeter. But it is easy to make the graduations so that the rise or depression of the gas-tube by 1 Mm. will indicate a change of temperature by exactly 0.1 degree (centigrade), or a multiple thereof. Consequently, it is possible to adjust the temperature of an apparatus (drying oven, etc.) by means of this instrument to $\frac{1}{100}$ of a degree.



As is evident from the shape of the regulator, it is intended to be introduced, by means of a perforated cork, into a neck of the drying apparatus or drying oven. The gas main is connected with *A*, and the burner with *G*, by means of rubber tubing. Recently it has been shown by Alex. Kaleczinsky that more accurate and constant results are obtained, and less annoyance is experienced from the volatilization of the mercury, if the thermo-regulator is kept outside of the drying oven, and a plain empty glass-tube filled with air fitted into the regulator (compare our July number, 1886, page 133).

In our opinion it would be a simple matter to combine the salient features of both of these instruments. Were the attachment for accurately regulating the adjustment of the inner tube by a graduated scale and a micrometer screw combined with the principle involved in Kaleczinsky's apparatus, in which the regulator proper is never exposed to direct heat, we believe that the apparatus would become still more exact and practical.

Assaying Laudanum.

A READY method of assaying laudanum, recommended by Chas. Bullock, consists in evaporating the tincture on a water-bath to $\frac{1}{4}$, and adding to the thick fluid extract enough pure kaolin (white china clay) to form a thick paste. Water is then added gradually, with stirring, to make it a homogeneous mixture, which is then transferred to a wet filter. After the liquid has filtered through, wash the remainder until the filtrate is clear and ceases to be bitter. The washings are evaporated and added to the first filtrate, which is then tested for morphia in the usual way. The kaolin serves to separate the particles of resin, and permits complete extraction of the soluble portions.

Purpura Hemorrhagica from taking Coal-Oil.—DR. P. GUNTERMANN reports a case of a boy about five years old who suffered from purpura hemorrhagica from swallowing about two tablespoonfuls of coal-oil.—*Amer. Pract. and News*, May 14th, '87.

The Expressed Juice of Rumex Acetosa is recommended by Dr. J. Lamb, of Aurora, Ind., as an escharotic application to epithelioma in cases where operative measures are inadmissible.—*Jour. Amer. Med. Assoc.*

* After Deutsche Chem. Zeit., No. 28.

On Color Tests for Strychnine and other Alkaloids.

THE following characteristic and delicate test for identifying strychnine does not appear to have been noticed. The alkaloid on a glass slide or a porcelain crucible lid, is dissolved in a drop of dilute nitric acid, and gently heated; to the warm solution a very minute quantity of powdered potassium chlorate is added, which will produce an intense scarlet color; one or two drops of ammonia will change this to a brownish color, giving a brownish precipitate; the mixture is then evaporated to dryness, when it leaves a dark green residue, dissolved by a drop of water to a green solution, changed to orange-brown by potash, and becoming green again with nitric acid; these last changes of color may be repeated any number of times.

The green coloring-matter is evidently a product of the action of ammonia upon the scarlet body; for if this be bleached by heating or by excess of chlorate before the ammonia is added, the residue on evaporation is light brown, and yields with potash a bright yellow solution which is nearly bleached by nitric acid.

No other of the commonly occurring alkaloids which I have tried could be mistaken for strychnine by the above test, but each of them exhibits some peculiarity when treated in the same way, which would give a clue to its identity. This will be seen in the subjoined table, in which the tests are supposed to be applied to the same portion of the alkaloid, as described:

TABLE OF COLOR-TESTS.

	HNO_3.		$KClO_3$.	NH_3.	Residue.	KHO.	HNO_3.
	Cold.	Heated.					
Strychnine	.....	Pink.....	Scarlet.....	Brownish precipitate.	Green.....	Orange.	Green.
Brucine	{ Scarlet.... / Violet.... }	Yellow... ...	Yellow.....	Bright yellow.....	Green.....	Dark brown..	Green; brown.
Narcotine	.....	Bright yellow.	Yellow.....	Dark brown.....	Dark brown..	Dark brown...	Reddish yellow.
Morphine	Orange-red...	Yellow.....	Yellow... ...	Red-brown.....	Light brown..	Light brown..	Light brown.
Quinine	.....	.....	.....	Green precipitate.....	Light brown..	Light brown..	Light brown.
Cinchonine	.....	.....	.....	White precipitate....	Light brown..	.....	.....
Caffeine	.....	.....	Pale yellow...	Bleached.....	Red; yellow..	....	....

Some few months ago, I drew attention, in the *Chemical News*, to the use of bromine-water in the detection of alkaloids. I find that a more convenient reagent can be made by mixing a weak solution of potassium chlorate with enough strong hydrochloric acid to turn it bright yellow. This euchlorine solution is added by degrees to the solution of the alkaloid in HCl, which is boiled after each addition.

Strychnine gives a fine red color, bleached by excess and returning when boiled.

Brucine gives a violet color in the cold, which is bleached by excess and restored by boiling.

Narcotine gives a bright yellow color in the cold, which becomes pink on boiling and adding more of the euchlorine solution.

Quinine gives a faint yellowish pink on boiling.

After coloring the solution, weak ammonia is gradually added.

Strychnine gives a yellow color unchanged by boiling.

Brucine gives the same.

Narcotine gives a dingy green, becoming brown on boiling.

Quinine gives a bright green, becoming yellow on boiling.

Morphine gives no reaction; but if, after boiling with the euchlorine solution, the liquid be cooled and allowed to remain in contact with zinc for a minute or two, it will give the characteristic pink reaction with ammonia.—C. L. BLOXAM, *in the Chem. News*, April 7th, 1887.

New Formulas for Ink.

FROM a series of new formulæ given by Eugen Dieterich in his "Neues Pharmaceutisches Manuale" (Berlin, 1887), we select a few as specimens, remarking at the same time that they have been declared by experts to be among the best ever published:

I. NUTGALL INKS.

1. *Ink-Body A.*

Macerate 200 parts of coarsely powdered Chinese galls for 24 hours with 750 parts of distilled water, strain and express. Upon the residue pour 350 parts of boiling distilled water and express after one hour. Triturate 5 parts of white bole with the mixed strained liquids, raise once to boiling, removing the scum, and then filter through flannel-bags. Wash the latter with water, until the total weight of the filtrate is 1,000 parts.

2. *Ink-Body B.*

300 parts of coarsely powdered Chinese galls, and 100 parts of fustic in coarse powder are extracted, as in the preceding case, with 750 parts of cold and 350 parts of boiling distilled water, the united strained liquids clarified with five parts of white bole, and the weight of the final filtrate made up to 1,000 parts.

In place of the extract of galls, tannin may be used; but in this case, as the other constituents of the extract are absent, it is necessary to add more of the salts, so as to increase the body of the ink. Inks made with tannin require more time to get black.

3. *Solution of Indigosulphate of Sodium.*

Introduce 150 parts of fuming sulphuric acid into a flask placed in cold water, and gradually add, avoiding increase of temperature, 20 parts of powdered indigo, previously dried at 212° F. Cork the flask and set it aside for 8 days at the ordinary indoor temperature. Meanwhile prepare a filtered solution of 205 parts of carbonate of sodium and 430 parts of distilled water, add this in small quantities, at the end of 8 days, avoiding loss by effervescence, warm gently to remove retained carbonic acid, and finally add water to make the total weight 800 parts.

4. *Solution of Crude Acetate of Iron.*

Macerate 10 parts of iron-turnings with 100 parts of wood vinegar as long as any gas is given off; then digest 2 or 3 hours at a temperature not exceeding 122° F., filter, and adjust the filtrate to the spec. grav. 1.115.

5. *Alizarin Ink* (also *Copying Ink*).

a. Dissolve 50 parts of green sulphate of iron in 750 parts of ink body B (cold), and then add the following ingredients in the order named: distilled water 100, solution of indigosulphate of sodium 150, solution of acetate of iron 25, chloride of ammonium 20, sulphate of sodium 20, sugar 20 parts.

b. Mix tannin 50, green sulphate of iron 40, chloride of sodium 25, sugar 25, bisulphate of potassium 7.5, benzoic acid 2, dry indigocarmine 3, and picric acid 0.5 parts, with 1,000 parts of boiling water.

Either of these inks is decanted into a bottle which must be well stoppered. After a fortnight, the clear ink may be drawn off from the sediment.

These inks will retain their copying quality for a period not exceeding twenty-four hours. Fresh writing furnishes brilliant copies.

6. *Blue Nutgall Office-Ink* (Ultramarine-Ink).

a. Mix 500 parts of ink-body A with a cold mixture prepared from: distilled water 300 parts, green sulphate of iron 30 parts, sugar 20 parts, hydrochloric acid 2 parts. Also dissolve, with a gentle heat, 2 parts of water-soluble aniline blue in 200 parts of distilled water, and add this when cold to the mixture first prepared.

b. Dissolve 40 parts of tannin, 30 of sulphate of iron, 35 of sugar and 2 of hydrochloric acid in 900 parts of distilled water, and add to it a solution of 2 parts of water-soluble aniline blue in 100 parts of dist. water prepared by heat and then cooled.

Decant as in the preceding inks.

7. *Red Copying Ink.* ("Imperial Ink," "Isatin-Ink, "Crown-Ink," "Coral-Ink," etc.)

Dissolve 50 parts of extract of logwood, in a mortar, in 750 parts of distilled water without the aid of heat, add 2 parts of chromate of potassium and set aside. After twenty-four hours add a solution of 3 p. of oxalic acid, 20 p. of oxalate of ammonium, and 40 p. of sulphate of aluminium, and 200 p. of distilled water, and again set aside for twenty-four hours. Now raise it once to boiling in a bright copper kettle, add 50 p. of wood vinegar, and after cooling, fill into bottles which must be corked. After a fortnight decant.

This ink is red in thin layers, writes red, gives excellent copies in brownish color, and turns blackish-brown upon the paper.

8. *Violet Copying Ink.* (Hæmatin-Ink; Victoria-Ink, etc.)

Dissolve 40 parts of extract of logwood, 5 of oxalic acid, and 30 of sulphate of aluminium, without heat, in 800 parts of distilled water and 10 parts of glycerin; let stand twenty-four hours; then add a solution of 5 parts of bichromate of potassium in 100 parts of distilled water, and again set aside for twenty-four hours. Now raise the mixture once to boiling in a bright copper boiler, mix with it, while hot, 50 parts of wood vinegar, and when cold put into bottles. After a fortnight decant it from the sediment.

In thin layers, this ink is reddish-violet; it writes dark-violet, and furnishes bluish-violet copies.

The Black-Process.

A BLACK-PROCESS, which will compete for favor with the well-known blue-process familiar to engineers and others, is technically known as heliography, is simple, easy, and inexpensive, while the prints are ink-black and are made from drawings or positives and negatives. We owe this process to Mr. Poitevin, but it has been slightly improved.

Sensitizing solution.—Dissolve separately.

1. Gum Arabic..... ....13 drams.
   Water..... ....17 oz.
2. Tartaric Acid.....13 drams.
   Water ..... 6 oz., 6 drams.
3. Persulphate of Iron..... 8 drams.
   Water..... 6 oz., 6 drams.

The third solution is poured into the second, well agitated and then these two solutions united are added to the first, continually stirring. When the mixture is complete add slowly, still stirring, 100 C.c. (3 fluid oz. 3 drams) of solution of perchloride of iron at 45° Beaumé (spec. gr. 1.450). Filter into a bottle and keep away from the light. It keeps well for a very long time.

[*Note by Ed. Am. Dr.*—We presume that by "Persulphate of Iron" the "Solution of Tersulphate of Iron" is meant. So far as we know Poitevin's original process, modified by him in 1879, it involved the use of tartaric or citric acid with solution of ferric chloride only.]

Sensitizing the Paper.—Here especially it becomes necessary to select a paper that is very strong, well sized, and as little porous as possible. By means of a large brush or sponge apply the sensitizing liquid very equally in very thin and smooth coats; then dry as rapidly as possible with heat, without exceeding, however, a temperature of 55° C. (131° F.). The paper should dry in obscurity and be kept away from the light and dampness. Notwithstanding all these precautions, it does not keep well long, and if it is desired to act with some certainty it is better to have a stock to last only a fortnight. Freshly prepared, it is better than a few days afterward. It should be of a yellow color.

Printing.—The tracing, made with very black ink, is placed in the printing-frames, the drawing in direct contact with the plate; then place over it the sensitized paper, the prepared side in contact with the back of the tracing. There is no necessity to make use of photometric bands, as the progress of insolation is sufficiently seen on the sensitized paper during the exposure. From yellow that it was, it should become perfectly white in the clear portion; that is to say, upon which there is no drawing of the transfer or positive *cliché* that is to be copied. This is ascertained by raising from time to time the shutter of the frame. The exposure lasts from ten to twelve minutes in the sun; in summer less, in winter more. When the exposure is ended, remove the print from the frame, and it should show a yellow drawing upon a white ground. If in the sensitizing bath a few cubic centimeters of a rather highly concentrated solution of sulphocyanide of potassium have been added, this bath becomes blood red, and colors the paper the same; in this case the print also whitens during exposure, but then the image instead of being yellow is red on a white ground. This substance, however, is, if we may so speak, inert, or without any other action. It is very fugitive, and even disappears in a short time in obscurity; it has no other use, therefore, than to render the drawing or the image more visible after exposure.

Developing the Prints.—When the print has been sufficiently exposed, it is taken from the pressure frame and floated for a minute in the following solution, so that the side upon which is the image should alone be in contact with the surface of the liquid, avoiding air-bubbles between the two surfaces. Otherwise defects would be found in the print. To ascertain this, raise in succession the four corners. The developing bath is composed as follows:

Gallic Acid (or tannin)..... ..31-46 grains.
Oxalic Acid..... 1¼ grains.
Water..... .. ..34 oz.

In this bath the orange, yellow or red lines are changed into gallate or tannate of iron, and form, consequently, a veritable black writing ink as permanent as it. The print is then plunged into ordinary water, well rinsed, dried, and the print is now finished. The violet black lines become darker in drying, but unfortunately the ground, which appears of a pure white, often acquires, in drying, a light violet tint. For prints with half tones this is of no importance, but for the reproduction of plans, for example, it is very objectionable. By this process we have the satisfaction of obtaining a drawing in black lines similar to the original and in most cases this is sufficient. —*American Stationer.*

Papayotin was used by Dr. Schwimmer (*Wiener Med. Woch.*) in 25 cases of fissure of the tongue, some of which were inveterate, with excellent results. He used 1 to 2 parts of papayotin in 10 parts each of glycerin and distilled water, applying the mixture from 2 to 6 times daily, with a camel's hair brush, after drying the surface. Pain was stopped, and epithelium seemed to be renewed under its influence.

Manufacture of Gold-Leaf.

THE extreme malleability of gold has made it a prominent metal in the useful as well as the fine arts. It has been calculated that from two to four million dollars' worth of this precious metal is annually used on ornaments, in gilding, in lettering, edging of books, in sign, ornamental painting, and in dentistry. Of course, the greater proportion of this is for the first-named purpose, although there appears to be a great amount used in the other industries. A comparatively small amount is necessary to cover a great deal of space. A cubic inch can be hammered so as to cover a space thirty-five feet wide and one hundred feet long, and twenty of our twenty-dollar gold pieces can be drawn into a wire that would reach around the globe.

The gold-leaf beater's art is one of the most surprising when the result is considered. The minute films are so thin as hardly to retard the light, and yet possess all the brilliancy of color of the solid block of gold of about 22 carats. It is first cast into bars 8 inches long, 1 inch wide and ¼ inch thick, the weight being about 35 ounces. It is then rolled out until it is about as thick as your finger nail; the "ribbon," as it is called, is then weighed into packages or "beatings" of 2½ ounces each. These beatings are what the men first start to work on. A man will cut one of these beatings (of 2½ ounces) into 180 pieces, making the pieces about an inch square. He then puts them into a "kutch," which is made of prepared paper, the size being 2½ inches square; he lays these 180 pieces of gold between these papers, first a paper, then a piece of gold. He will then beat on the "kutch" with an iron hammer weighing about eighteen pounds, until the gold is the size of the "kutch;" these pieces are then cut into quarters, and then filled into a "shoder," which is made of gold-beater's skin, the size being four inches square and holding all the pieces, numbering 740. The gold-beater's skin is made from a preparation of a large portion of the large intestines of an ox, and the prepared paper is, or may be, parchment made from calfskin, rendered clear and white by a peculiar operation that gives it the oppearance of writing-paper, for which purpose it is used to some extent. The pieces are then beaten out in the "shoder" with a hammer weighing about thirteen pounds, making them all four inches square.

These pieces, or "shoder leaves" (as they are now called) are cut into quarters, making them two inches square, and in all 2,880 pieces or quarters of "shoder leaves." These are then filled into three moulds; each mould is made of the same material as the "shoder;" the moulds are five inches square and hold 900 pieces or quarters of "shoder" each.

The moulds are then beaten out separately with a hammer weighing about eight pounds, until the gold inside is very nearly square with the edge of the moulds. They are then sent to the girls for booking. Each girl will then take a mould full of gold, taking each leaf out separately and trimming the edges of the leaf off, making them 3¼ inches square, and as the leaves are cut they are put into a paper book, holding twenty-five leaves. The gold is then ready for sale. It is sold by the single book or by the pack, twenty books making a pack.—*Amer. Stationer.*

Avoidance of Injury in Railroad Accidents.

IT is very difficult to instruct a person what he had better to do in case of a railroad accident. It is, however, highly important that some proper suggestions be given. It might be well to have an emergency lecture prepared in the most careful manner, and brought to the notice of the travelling public, so that the injuries received shall be reduced to a minimum. One cannot guard against missiles in the shape of flying beams, stoves, and seats, but there should be certain simples rules impressed upon the minds of all, which they will act upon almost instinctively. It appears reasonable that if one can keep his place by clinging to his seat, he has the best chance, if nothing strikes him. I know of a case where a passenger was riding in the front part of a smoker. He was seated with his back square against the seat. He received no injury whatever from a rear collision that shook the passengers up and sprained one's back so that the patient laid abed two weeks. It is evident a square seat, with the feet upon the rail, is the best position to be in for an ordinary accident. One of my patients clung to her seat, and although her car was carried into the street, she escaped with very little jarring and shock. The train hands usually have a better chance to see what is coming, and may jump, but this is not considered good policy since the use of the Miller Patent platform and Westinghouse air-brake. An old rule among railroad men runs: "Don't jump till you can see the size of the gravel."—E. P. GERRY, M.D., in the *Boston Med. and Surg. Jour.* of May 19th, 1887.

FOR corns and bunions an efficient remedy is equal parts of castor oil and tinct. iodine. This is to be painted on the part two or three times a day.—*North Carolina Med. Jour.*

Some New Sugar Reactions.

DR. HANS MOLISCH, of Vienna, recently announced some new reactions for sugar (see this JOURNAL, 1886, 168), in one of which α-naphthol is used, and in the other thymol. Regarding the latter, David Lindo writes in the *Chem. News* (May 20th, 1887) as follows:

"I have made some experiments with the thymol test but not with α-naphthol, for want of the reagent. Fifteen Gms. of thymol were dissolved in alcohol, the volume made up to 100 C.c., and two drops of this solution used in each experiment. The quantity of liquid taken for testing was always half a C.c., and of strong sulphuric acid 1 C.c. The acid must be quite *free from oxides of nitrogen*, or a mistake may easily be made, as will be explained further on.

Dilute starch paste (one per cent starch) gave a very fine reaction with the test, and a 1 per cent solution of gum arabic (fresh) a very good one. The color was *intense red* with the gum at first, but became brownish after a little time from charring. On diluting with 10 C.c. water, and stirring, a fine *purple red* precipitate formed in the starch tube, and a dark purple one in the gum. This precipitate is by far the most characteristic feature of the reaction, and will be more fully referred to presently.

One part of cane sugar in 200,000 parts of distilled water gave a distinct reaction, but none could be obtained with 1 part of sugar in 500,000 parts of water.

All these experiments have been several times repeated; the results were found to be somewhat irregular. Thus with a dilution of 200,000 a tint was sometimes obtained that could not be distinguished from the color produced with a dilution of 100,000. This is owing chiefly to variations in the rise of temperature that occurs on adding the acid, and cannot be guarded against, whatever precautions may be taken.

All samples of normal human urine examined gave the reaction (or one very similar to it) when undiluted, and most of them when diluted with 50 volumes of water. In the undiluted state the reaction was sometimes greatly obscured by charring, but on diluting the product with 20 C.c. of water the purple tinge was always observable, and a purple precipitate fell after some time. When the urines were subjected to the action of the sulphuric acid alone, and the products diluted to the same extent as those in which thymol had been used, the difference was very striking, the precipitates being devoid of any purple tinge.

Yet all this, I think, it will be pretty generally considered, falls far short of proving the presence of sugar in normal urine, a complex fluid, which must be acted on by such a potent agent as concentrated sulphuric acid to bring about the reaction.

I have cautioned against the use of sulphuric acid containing oxides of nitrogen in trying these experiments, the reasons being that these bodies as is very well known, give color reactions with thymol in the presence of strong sulphuric acid, and some of these reactions cannot be distinguished by the eye from the reaction produced by sugar.

If a very dilute solution of nitrite of potassium—say 0.3 Gm. in 100 C.c. water—is employed in place of a sugar solution (say ¼ per cent), and used in the same way, the color reaction obtained with the nitrite will be undistinguishable from that produced by the sugar. On diluting the nitrite product with 10 C.c. water, a purple precipitate might possibly form, though it is not often obtained under the conditions of the experiment. This precipitate is thymol dye, and closely resembles in appearance some of the precipitates obtained in sugar testing. They are easily distinguished by collecting on small filters and, after washing, adding a small quantity of alcohol. The *sugar* precipitate *dissolves*, and the *color* is instantly *destroyed*. The *nitrite* precipitate *dissolves* in the alcohol, forming a beautiful *purple* solution.

Thymol is not the only stearoptene that yields, with sugar and concentrated sulphuric acid, an intense purple-red product. Kingzett states that common laurel camphor, dissolved in sulphuric acid, gives with sugar a most beautiful color reaction—a statement I can fully confirm, though I have not been able to render this camphor available for showing the presence of sugar in highly dilute solutions. Menthol I find gives a splendid reaction, an alcoholic solution being used in the same way as thymol. The solution, however, must be much weaker, 1 Gm. of menthol dissolved in 100 C.c. alcohol being strong enough for the purpose.

Half a C.c. of sugar solution, 1 part in 40,000 parts of water, gives a very distinct reaction with this reagent. The menthol used was in crystals resembling in appearance magnesium sulphate.

On adding water, however, to these colored products from common camphor and menthol, the colors are at once destroyed; there is no characteristic precipitate formed as with thymol, which on this account is decidedly to be preferred as a reagent in testing for sugar.

The presence of sugar when mixed with glycerin is easily shown by these tests; the glycerin should be mixed with about ten times its volume of water before applying them.

Absorption through the Skin.

THE method followed by Ritter and Pfeiffer in their experiments was to rub well into the extensor surface of a healthy limb half an ounce of an ointment containing the substance under investigation, then to cover the spot with a protective bandage to prevent any possible absorption by the lungs, and after twenty-four hours to collect some urine and examine it for the presence of the drug. It was found that potassium iodide from a ten-per-cent ointment passed into the urine in only one out of five cases, and this was after the ointment had been used for four days, when the skin had become irritated and its continuity practically destroyed by the prolonged action of the fatty acids derived from the decomposition of the lard. Sodium salicylate applied in the same way was never found, even in traces, in the urine; but salicylic acid invariably gave its characteristic color test with ferric chloride within a few hours after its application.

This behavior of salicylic acid is attributed to the property possessed by it of softening the epidermis and rendering it permeable, and the extent to which this takes place is shown by the fact that if the application of salicylic acid ointment be followed by one of potassium iodide ointment, the potassium iodide quickly passes into the organism and becomes detectable in the urine. When lard was replaced by lanolin, it was not found that the ointment manifested any superior penetrative power. Some other experiments made to test the capability of the skin to absorb substances sprayed on to it in watery solution gave, when precautions were taken to exclude the spray from the respiratory passages, only negative results.

Fire Caused by a Show-Bottle.

MR. G. W. FITTON writes to the *Chemist and Druggist* that he has narrowly escaped what might have been a serious affair. "Not having the blind down in front of the window as usual, and the sun being very strong, the rays, after passing through a large carboy filled with the usual solution of bichromate of potash, were thrown on to the woodwork of the window inclosure, soon burning a piece nearly ¼ inch thick and 4 inches long; more would have followed had I not discovered it in time. Should like to know," he adds, "if you have heard of a case like this occurring before?"

There have been a number of similar incidents recorded, and it stands druggists in hand to be careful about displaying globular-shaped jars in their windows where the sun's rays can be refracted by them.

Decolorizing Reddened Carbolic Acid.

S. DEMANT communicates to the *Schweiz. Wochenschr. f. d. Pharm.*, No. 14, the following method of decolorizing carbolic acid which has acquired a red color, for the benefit of those who cannot accept the offer made by some manufacturers to exchange the reddened acid for one that is colorless.

Melt the reddened acid on the water-bath, to every 89 parts of it add 11 parts of alcohol, and expose the resulting red liquid to a freezing temperature. When most of it is solidified, pour off the supernatant liquid and allow to drain well. In this way perfectly white crystals are obtained which, when melted, yield a colorless liquid or one that has, at most, a faint reddish cast.

Chemical Landscapes.

ONE of the prettiest and most interesting chemical experiments imaginable is that resulting from immersion of some lump ammon. hydrochlor. into a 25 per cent solution of nitrate of lead strongly acidified with nitric acid. Suitable proportions are 2 oz. nitrate of lead, 6 oz. distilled water, ½ oz. nitric acid, from 2 to 3 drachms of ammon. hydrochlor. The chemical action may be explained as follows: The nitric acid decomposes the hydrochlorate, forming ammonia nitrate and setting free hydrochloric acid gas, which the moment the outer circumference of each minute bubble comes in contact with the lead solution forms insoluble lead chloride. This is piled up in the most fantastic shapes, hollow stems reaching to the surface of the solution. After a few hours splendid crystals of ammonia nitrate begin to form. The effect is indescribably beautiful. With a little imagination, perfect winter landscapes, ruins, trees, etc., may be made out. The vessel containing the solution should be placed on a mantel-shelf or some place where it is not likely to get shaken. This is a *sine qua non*. If undisturbed it will last for days. The cost is almost *nil*.

Naphthalin is acquiring a good reputation as an efficient remedy in the treatment of diarrhœa when it is due to disturbance in the small intestine. It is strongly probable that the *cholera infantum* of summer is usually the result of poisoning by absorption of the putrid contents of the intestine, and in such cases naphthalin has already been of great service. Adults can take 5 to 15 grain doses with glycerin and charcoal.

Solanine (derived from *Solanum nigrum* and from the fruit of the potato) is being employed in place of morphine to relieve pain and as a narcotic. Its use in large doses is said to be unattended with nausea, and as much as 50 centigrammes have been given without unpleasant effect, 5 to 30 centigrammes being the usual dose. Solanine and its hydrochlorate is made by Mialhi, of Paris, who sells it from 6 to 10 francs per gramme.—*Chem. and Drugg.*

Platinum.—The most important sources of platinum are the hydraulic mines at Nizhne-Taglsk and Forgo-Blagodat, in the Ural mountains. About 80 per cent of the world's production comes from this source. Next in importance are the gold washings of the Pinto, in the United States of Colombia. About 15 per cent of the entire product comes from this source. It is also found in Brazil, Borneo, Hayti, Peru, India, Australia, and in the sands of the Chaudiere River, in Quebec. It has recently been found in a quartz vein in New Zealand. Platinum has only been found associated with free gold in the placer deposits of California in any quantity, viz., 100 and 200 oz. per annum. It contains about 85 per cent of the metal, and is brought to London to be refined.

Labelling Glassware.—The following formula has been recommended for sticking labels to glass: Select three or four pieces of gum tragacanth, about the size of a coffee berry, and place in a two-ounce wide-mouthed bottle; then pour over it acetic acid so as to barely cover the gum, and place the bottle aside until the next day, by which time the gum will have absorbed the fluid and become very much swollen. Now add water, stir well, and in a day or two a semi-transparent jelly will be the result. A drop or two of 95-per-cent solution of carbolic acid should then be added, and it will keep indefinitely.

Emulsifying Chloroform and Ether with Gum Arabic.—A modification of Prof. Parrish's method, suggested by T. S. Wiegand, in the *Amer. Jour. of Pharm.*, is as follows: The gum is placed in a dry bottle, the chloroform added and shaken thoroughly. The water is next added and the shaking continued until the process is completed. This mixture, on standing, separates into two layers; a thick, white layer containing the gum and chloroform and one containing most of the water. The same process is employed for an ether emulsion, but the product, at first transparent, separates, like the foregoing, with the difference that the ether layer is uppermost. Upon repeating the shaking, the mixture is easily effected.

Mr. Wiegand suggests that when a very volatile liquid is to be dispensed in a large number of drops, a few drops can be measured in a minim-glass from which the whole amount can be estimated and rapidly measured without the loss resulting from evaporation during counting.

Acid Hydrochlorate of Quinine is recommended for hypodermic use, 2 grammes being soluble in 3 grammes of distilled water. It forms a light greenish-yellow solution; reddens litmus paper slightly; is stable; produces no irritation of the skin and admits of a comparatively large dose being used. As prepared by Erba, of Milan, the salt is an amorphous powder of yellowish-white color.—*Chem. and Drugg.*

Cod-Liver Oil is said to be adulterated with paraffin oil, the simple test for which is saponification, a property not residing in paraffin.—*Amer. Jour. Pharm.*

Sandal-Wood Oil is recommended by Dr. E. Philbert as a remedy in renal colic, who used it himself in several attacks. Four of the usual capsules were taken for a dose, and a warm bath was used at the same time. He believes that the oil gave him great relief from one of the most painful of maladies.—*Practitioner.*

Cannabis Indica, in the form of tincture, is recommended by Staff Surgeon J. Rumia, of Cawnpore, India, as a remedy in dysentery. He administered it in the following combinations:

℞ Tincture of Cannabis indica, ♏ xv.; Subcarbonate of Bismuth, gr. v.; Mucilage of Acacia, ʒ ss.; Tincture of Ginger, ♏ xv.; Compound tincture of Cardamom, ♏ xx.; Spirit of Chloroform, ♏ xx.; Cinnamon Water, ad ℥i. To be taken thrice daily. It is pleasant to take, but liable to cause vomiting unless taken after eating. It acts best in subacute and chronic cases.—*Practitioner.*

Pilocarpine as a Galactagogue.—Dr. Chéron, who has studied the action of pilocarpine upon the mammary glands, believes that he has found in it a specific. The treatment has been practised by him in nine cases with satisfactory results in all but one. Five centigrammes of the nitrate of pilocarpine were hypodermically injected as soon as the milk became scanty, whether this took place suddenly or by degrees. The injection was repeated every day. Under its influence the skin of the face and, afterwards, that of the body became hot for a few moments, but there was seldom any moisture. It is essential to success not to produce diaphoresis. If the scantiness of secretion has existed for some time, ten or twelve injections are required; on the other hand, if it has come on suddenly, two or three will suffice. The treatment had no ill effect either on the nurse or nurseling.—*Therapeutic Gazette.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,957.—**Congo-Red and Congo Paper** (E. F. S.).

We have already noticed Congo-red and its application as a reagent for acids and alkalies on page 13 of our last volume. The first sample of Congo-red ever brought to this country reached us during 1885, and we had made quite a series of experiments with it, but found it not sufficiently delicate to answer all purposes. Now, however, the coloring matter is prepared in a much purer state, and is certainly in many respects much superior to litmus. Congo-red is a coal-tar color, the exact chemical composition of which is, we believe, not quite determined. Of course, it is a patented color, being made by the Berlin Aniline Works. It dies cotton and other vegetable fibres (paper) without mordants, and is soluble in alcohol and also in water. Paper tinted with a *weak* solution of it has a pinkish-red color which is changed to *sky-blue* by *acids*, and again turned red by alkalies. It has the great advantage of not losing its color by the latter being washed out when thrown in a liquid.

The beauty of the change of color appears most prominently in alcoholic solution, but paper may be impregnated either with aqueous or alcoholic solution.

As Congo-red changes color in opposite directions from litmus, it may sometimes be used in conjunction with the latter, that is, in comparative experiments, where the degree of acidity or alkalinity is faint, to give a positive decision.

Congo-red may be obtained through dealers in chemicals, or through wholesale drug houses.

No. 1,958.—**Rendering Rubber Tubing Clean and Preventing its Getting Brittle** (Laboratory).

You are probably not aware that even the so-called "pure" india-rubber tubing is vulcanized. Perfectly pure rubber is not suitable for such purposes as tubing, since it is apt to undergo alterations in elasticity, cohesiveness, and other properties much more rapidly than the vulcanized. The best qualities of tubing, however, contain only a small proportion of sulphur, and the darker they are (if not colored artificially), and the softer and elastic, the better is their quality. Ruinous competition between the different firms engaged in the manufacture of rubber, however, has resulted in the almost complete disappearance of really good rubber tubing from the market. It is usually obtainable only through certain houses who have large quantities of a special tubing made for themselves exclusively. The ordinary tubing is "filled" with more or less useless material, such as oxide of zinc, sulphate of barium, sulphate of calcium, etc., up to 70 per cent and more in the worst cases. No wonder, that much of the ordinary tubing soon kinks, or loses its elasticity and becomes brittle.

The white superficial coating (sulphur) on vulcanized rubber tubing, or on rubber corks—we have reference mainly to the good qualities—may be removed by boiling the tubing or corks in water containing about 10% of caustic soda and to which about 10% of sulphite of sodium is gradually added. The tubing laid into the bottom of the vessel—upon which a layer of coarse gravel ought to be first put—in a horizontal position, in form of a regular coil, ought to be raised out of the boiling liquid by one end frequently, a glass-funnel inserted in this, and by means of a suitable ladle or dipper some of the boiling liquid poured into the funnel, so that the liquid contained within the tube will be frequently changed.

When the tubing and the liquid has assumed a dark color, and the former appears to be quite clean upon the outside, it is taken out, and thoroughly rinsed, inside and outside, first with boiling, then with cold water. Finally, it is laid in water, either saturated with salicylic, or benzoic or boric acids, or naphthol, to prevent the formation of fungus, and kept in the water until wanted. It will then be always flexible, soft and as if just from the factory, with the additional advantage of being thoroughly clean.

No. 1,959.—**Isonitril Reaction** ("Co.").

Isonitril is a generic term for a class of bodies consisting of an alcohol radical, such as methyl CH_3, ethyl C_2H_5 etc., in combination with cyanogen, the combination being a peculiar one in this, that the alcohol radical is directly combined with the nitrogen, but not with the carbon, of the cyanogen. It is produced in a variety of ways, for instance by the action of an alcoholic solution of potassa upon a mixture of chloroform either with a primary alcohol base, or with aniline or another primary monamine. In each separate case, a particular kind of isonitril is formed, depending on the nature of the alcohol. For instance, if the alcohol in which the potassa is dissolved is the ordinary ethylic alcohol, then *ethylisonitril* (ethylisocyanide), also called isopropionitril, or ethyl-

carbylamine, $C_6H_5.NC$, is formed. If methylic alcohol was used, *methylisonitril* (methylisocyanide) is formed. All these isonitrils have a very *disagreeable* persistent *odor*, recognizable in a very small quantity.

The formation of these bad-smelling compounds has been utilized in analysis as an identity reaction for any of the bodies which are concerned in its production. It has been especially utilized as an identity-test for chloroform. Bromoform and iodoform yield the same result, but there are then other means available to distinguish between them.

Recently Dr. Chas. O. Curtmann, of St. Louis, has applied the reaction as a test for aniline derivatives when used as coloring matters in wines. He found when 4 C.c. of the suspected red wine or other colored liquid are mixed in a test-tube with 2 drops of chloroform and 4 C.c. of an alcoholic solution of potassa containing about 10 per cent, and the mixture, after being shaken, is gently warmed a few minutes, and then quickly heated to boiling, the characteristic odor of isonitril is developed if an aniline coloring matter was present. In certain cases, such as with acid fuchsine (rosaniline-sulphonic acid), a doubtful result is first obtained, but it is only necessary to add about 4 C.c. of concentrated sulphuric acid to produce the reaction. In doubtful cases, it is best to extract some of the coloring matter by shaking out with solvents, or, in the case of colored fabrics, by dissolving some of the coloring matter by diluted alcohol or some other solvent, and trying the reaction upon the extract thus obtained.

No. 1,960.—Delicacy of the Sense of Smell (B. H.).

On page 134 of our last volume we published the results obtained by Emil Fischer and Franz Penzoldt regarding this subject. These authors had ascertained that of all substances so far tested *mercaptan* (any alcohol in which oxygen is replaced by sulphur is called a mercaptan) and *chlorophenol* permitted the largest dilutions before becoming indistinguishable. Recently, the authors have republished their results, with a few additions, in *Liebig's Annalen*, 239, 131. They state there that as small a quantity as one twenty-three-thousand-millionth part of a milligramme of mercaptan, or one two-hundred-and-thirty millionth of a milligramme of chlorophenol in 1 cubic centimeter of air is still perceptible to a normal sense of smell, though it requires, according to their experiments, about 5 cubic centimeters of the impregnated air to come in contact with the olfactory region of the nose to produce a decided impression of any smell. The above quantities, expressed in volumes, would be as follows:

1 vol. of mercaptan is still recognizable in 50,000,000-000 vols. of air; and 1 vol. of chlorophenol in 1,000,000,000 vol. of air.

In addition to the proposition heretofore already made (see our July number of 1886, page 134), to utilize this immense diffusibility for the practical testing of the tightness of sewers, plumbing work, etc., the authors suggest a still futher application, though this is merely a natural sequence of the preceding proposition. They recommend its use for testing air-currents, the diffusion of gases, arrangements made for ventilation, or in geological or mining explorations involving fissures, lodes, or water-currents in mountainous districts.

No. 1,961.—Peter's Acetometer (Ultra).

This is an apparatus patented a number of years ago, though in our judgment so closely resembling other forms of apparatus previously recommended for the same purpose, and not patented, that we fail to see where the originality comes in. It consists of a graduated tube, which is to be filled to the mark 0 with the vinegar to be tested. From a bottle accompanying the tube, and containing a solution of soda tinted with phenolphthalein, enough of this is to be poured into the tube (in portions and shaking after each addition) until the red tint of the phenolphthalein remains permanent. The divisions on the tube over the mark 0 are then read off, and the strength of the vinegar is then known in terms of "grains," for instance, "40 grain vinegar," "50 grain vinegar," etc. These terms, though universally used in trade, are very indefinite, as they refer to *carbonate of potassium*, which is of very indefinite composition. Unless a chemically pure salt, prepared from the bicarbonate, is employed, no certain reliance can be placed upon the test, which is performed by ascertaining the number of *grains* of so-called "pure" carbonate of potassium which are required to saturate one fluidounce of the vinegar. Yet most persons who use the test in this manner, simply buy the commercial carbonate of potassium (sal tartar), containing up to about 17 per cent of water and some impurities besides. It would be much preferable—if a plain, coarse test is to be used—to employ precipitated chalk, in which case the end reaction would be recognized, not only by the cessation of effervescence when the acid is neutralized, but also by the fact that the liquid will cease to dissolve the slightest excess of the lime salt. In this case, of course, a smaller quantity of the latter would be required to neutralize the vinegar. For instance, supposing 1 fl. oz. of a certain vinegar had required 30 grains of commercial (hydrated) carbonate of potassium, the same vinegar would have required only a trifle over 18 grains of precipitated chalk. We have no hope of any change in the commercial mode of estimating the strength of vinegar being made in the near future. But it certainly appears necessary that some authoritative or legal definition of the "grain-system" should be made, and that the kind, and the degree of purity of the potassium (or preferable, some other salt) be exactly established.

Recently, an improved form of Otto's well-known acetometer has been recommended by Dr. W. Fresenius. This consists of a tube, like that described above, the graduation of which begins at 0 at a point sufficiently distant from the bottom to permit the ungraduated space to hold exactly 5 C.c. of the vinegar. A drop of phenolphthalein solution is then added, and successive portions of a volumetric solution of soda (of which one liter corresponds to 50 Gm. of acetic acid) is added, until finally, upon shaking, the liquid is tinted red. The graduation above the 0 mark reaches to 12 C.c., each being divided into fifths. Using a soda solution of the before-mentioned strength, the number of cubic centimeters used to neutralize the vinegar directly express the *grammes* of acetic acid of the same strength as that with which the soda solution has been standardized. The most suitable for this purpose, of course, is the 100% or glacial acetic acid.

No. 1,962.—Enameled Letters (C. F. D., New York).

"Please inform in your journal of what the white enameled letters on show windows is composed. Can it be cast in moulds? How is the polish or glaze produced?

The letter is formed in copper, and the surface which is to become the face of the letter is covered with powdered enamel. It is then subjected to a temperature sufficient to melt the enamel and cause it to adhere to the copper. The glazed surface depends mainly upon the degree of heat, and requires a great deal of experience on the part of the operator. Enamel is of the nature of glass. It cannot be cast in moulds.

Uses of Oil of Erigeron.—Prof. Roberts Bartholow, of Philadelphia, speaks favorably, in the *Physician and Surgeon*, of the use of oil of erigeron, in the following conditions: Menorrhagia, metrorrhagia, and hemorrhages in general, albuminuria due to chronic nephritis, cystitis and prostatic enlargement, and catarrh of the air passages. Its action is best shown when it is taken in small doses and frequently repeated, and he usually gives five drops on a lump of sugar, every 3 or 4 hours.

Rubber may be fastened to Iron by means of a paint prepared by macerating powdered shellac in about twice its weight of concentrated ammonia. It should be allowed to stand three or four weeks before being used.

Absorption of Oil by the Skin.—I. C. Hoffman writes to the *Scientific American:* "In your issue of March 26th is advice to one who wishes to gain in fat and strength. Let him take a warm bath, thoroughly "opening" his skin, then rub dry with warm, rough towels in a heated room, and when actually dry, let him rub in, thoroughly, any pure oil—cod-liver preferably, but olive will do—all over his body. He will find that thus ten times more will become assimilated than his weak stomach can possibly digest. Give the stomach rest and a chance to recuperate, while letting the skin do its work."

Peptonizing Ferment in Figs.—Dr. A. Hansen has been investigating the digestive properties of the common fig, and finds that the statements made by others concerning a peptonizing ferment in this article of food are correct. It acts also on starch and sugar. A syrup of dried figs is active. It is suggested that a syrup be made of this fruit to administer to children along with starchy foods so much in vogue.—*Phar. Journ.*

Pickle for Pathological Preparations.—Professor Grawitz, of the Berlin Pathological Museum, has since April, 1885, been making use of a pickling liquid for the preservation of pathological specimens, and after two years' test speaks enthusiastically of its usefulness. The liquid is prepared as follows: 150 Gms. of common salt, 40 Gms. of sugar, and 20 Gms. of saltpetre are dissolved in 1 liter of water. This solution is acidulated by the addition of 3 per cent of boric or tartaric acid. The acid is necessary on account of the decomposition of the hæmoglobin in the tissues. When the preparation is placed in the liquid, water is added until the object sinks in it. The pickle is ready in from four to eight weeks, when the objects are taken out and placed in fresh clear pickle. The quantity of water required to be added is from one-third to one-half. The vessels should be filled brimful, so that when the cover is placed on, no layer of air should remain under the cover; the cover should touch the liquid.—*Med. and Surg. Reporter.*

Chromic Acid is now prepared by Merck, of Darmstadt, absolutely free from sulphuric acid and hence very slowly deliquescent. Owing to its diminished liability to spread upon surrounding tissues, it is especially adapted for use as an escharotic in the nose and throat.

FORMULAS.

Incompatible Prescriptions.—The following familiar formulæ, whose combination results in an incompatibility of the ingredients, are taken from the *Therapeutic Gazette* of March 15th, 1887:

A common and dangerous action is that resulting from the mixture of alkaloids with alkalies or alkaline salts, of which the following is an example:

℞ Strychninæ Sulphat.....gr. ss.
Elixir. Brom. Chloral..... ℥ viij.

M. Sig. A teaspoonful morning and evening.

The result of this mixture is a colorless solution, from which is deposited in a few hours a crystalline precipitate which is the greater portion of the strychnine ordered. Although the elixir is not officinal, it is frequently prescribed, and its potassium bromide [if alkaline.—ED. AM. DR.] will deposit the strychnine as an insoluble bromide. The last dose taken, unless great care to shake the mixture well was observed, would result disastrously.

The following prescription may also result badly:

℞ Morphin. Sulphat.....gr. ij.
Liq. Ammon. Acet..... ...fl. ʒ ss.
Aq. destillat.,
Syr. Simpl..... ...āā fl. ʒ ij.

M. Sig. Teaspoonful doses as ordered.

When the diluted acetic acid has been neutralized, and an excess, although not great, of ammonium carbonate is present, the precipitation of the alkaloid will result as in the first instance.

The following may also prove incompatible:

℞ Potass. Iodidi..... ʒ i.
Spts. Æther. Nitrosi,
Aquæ. .....āā ℥ i.

When the spiritus ætheris nitrosi is not free from nitric and acetic acids (a result which is produced by the action of the air), iodine will be set free, and a colored solution take the place of a colorless one. The chemistry of the decomposition of the spiritus ætheris nitrosi is as follows:

$$2(C_2H_5NO_2) + 3O_2 = 2(HC_2H_3O_2) + 2HNO_3.$$

A familiar example of decomposition occurring in the organism when chemical substances are given is found in the simultaneous use of calomel and potassium iodide, as follows:

℞ Hydrarg. Chlor. Mit..... gr. iv.
Sacchar. Lactis .. ..gr. x.

M. F. pulv. No. 10. Sig. A powder three times daily.

Also,

℞ Potass. Iodid..... ℥ i.
Aq. destillat..... ʒ iv.

M. Sig. Teaspoonful every three hours.

A reaction between the calomel and potassium iodide occurs in the stomach [biniodide of mercury, metallic mercury, and chloride of potassium being formed] and bad results, through the irritating mercurial formed, may occur.

An explosion or unfortunate formation of gas may result from this prescription:

℞ Ammon. Carbonat.....ʒ ij.
Syrup. Scillæ..... ..fl. ℥ i.
Syrup. Senegæ..... ℥ i.

M.

The acetic acid in the syrup of squill has been overlooked in this combination; its union with the ammonium salt would result unfortunately through the liberation of carbonic acid gas.

Glycerin Lemonade.—The "*Revue générale de clinique et de thérapeutique*" attributes the following formula to Semmola:

Pure glycerin..... ....150 parts.
Citric acid..... ..... 1 part.
Water.....300 parts.

About one ounce of this solution is to be taken, in a glass of water, every hour. Thus administered, even in large quantities, glycerin does not cause gastro-intestinal disturbance.

An Injection for Gonorrhœa.—The "*Union Médicale*" attributes the following formula to Barré:

Tannic acid	3 parts.
Solution of subacetate of lead	6 "
Tincture of catechu.....	12 "
Sydenham's Laudanum*....	3 "
Rose Water.....	100 "
Distilled Water.....	300 "

To be used night and morning, each injection being retained for three minutes.—*N. Y. Med. Jour.*

Artificial Hunyadi Janos Water.—℞ Magnesii sulphatis, sodii sulphatis, āā ℥ ss.; potassii sulphatis, gr. ij.; sodii bicarbonatis, gr. viij.; sodii chloridi, gr. xx.; aquæ ad ℥ viij. M. Sig. Wineglass before breakfast.

Remedy for Lumbago.—Professor Burggraeve, Germany, recommends the following: ℞ Collodion, tincture of iodine, water ammonia, equal parts. M. Sig. Apply widely over the parts with a camel's-hair brush. (Said to relieve instantaneously.)

Formula for Rheumatism (St. Luke's Hospital).—℞ Potassii iodidi, ʒ iij.; vini colchici seminis, ℥ ij.; tincturæ opii camphoratæ, ʒ ij.; tincturæ stramonii ʒ vi.; tincturæ cimicifugæ, ℥ iij. M. Sig. Teaspoonful three or four times a day.

Peptone Suppositories.—Sauter prepares these suppositories with cacao butter, each containing twenty-five grains of peptone; they are mixed, and kept cold to prevent the fat from becoming rancid. In cases where patients cannot be nourished in the normal manner, they serve an excellent purpose, fifteen grains of dried peptone equalling two and one-half drachms of meat in nutritive value. Children may be given one suppository four times daily; grown persons, two or three times daily. The suppository should be lubricated with olive-oil, and the rectum previously cleansed by an enema.—*Therapeutic Gazette.*

An Asthma Cure.—The *Medical Record* gives the following as the composition of the patent asthma cure, which Dr. Holmes in his "One Hundred Days in Europe," says gave him more relief than any other of the many remedies that were showered upon him.

℞ Pulv. lobeliæ,
Pulv. stramonii fol.,
Pulv. potass. nitrat.,
Powd. black tea .....āā ℥ ij.

M. and sift.

Some of this is burned and the smoke inhaled.

Formulas for the Hypodermatic Use of New Remedies.—The following are from *A Manual of Hypodermatic Injections*, by Bourneville and Bricon:

1. Acid. chrysophanic.gr. $\frac{1}{4}$ to $\frac{1}{2}$
Aquæ destillat ..... ℥ 15

Employed successfully in eczema, lichen, prurigo, psoriasis, and urticaria.

2. Acid. osmici .....gr. 1½
Aquæ destillat..... ʒ 2½

For interstitial injections in the treatment of tumors; in the treatment of obstinate neuralgia (Billroth, Neuber), from 8 to 15 minims of the solution may be injected in the vicinity of the affected nerve.

3. Agaricini .....gr. ¾
Alcohol. absolut.....℥ 70
Glycerini.....℥ 85

The contents of an ordinary hypodermatic syringe, 20 to 30 minims, may be given for the night sweats of phthisis.

4. Antipyrin. hydrochlorat..gr. 15
Aquæ destillat..... .....℥ 15

Solution should be aided by heat. Huchard has used the drug with benefit as an antipyretic.

5. Cotoini puri... ....gr. 15
Æther. acetic .....ʒ 1

The contents of a hypodermatic syringe may be injected and repeated in fifteen or twenty minutes, or every hour, for obstinate diarrhœa, intestinal ulceration, in cirrhosis, and alcoholism. May be used in cholera, night sweats.

6. Kairin. hydrochlorat.....gr. 1½
Aquæ destillat.....℥ 15

A powerful antithermic; antipyrine is preferable.

7. Spir. Glonoini (alcohol. sol. of nitro-glycerin, 1 to 100..gtt. 30
Aquæ destillat. (lauro-cerasi)..... ℥ 2 6 ℥, to ℥ 2½

This should be injected into the muscles of the back or nates. To be given in angina or cerebral anæmia.

8. Paraldehydi,
Aquæ lauro-cerasi.....āā ℥ 75
Aquæ destillat. ..... ℥ 3¾

The syringe should be plunged into warm water before giving the injection, to heat the fluid moderately. Paraldehyde is hypnotic and sedative.

9. Pereirin. hydrochlorat.grs. 15 to 30
Aquæ destillat..... ℥ 5

Dose from 1½ to 6 minims in intermittent fever.

10. Thallin. sulphat.... .....gr. 15
Aquæ destillat .....℥ 75

The solution should always be warmed. One and a half grains of thallin, given hypodermatically, are sufficient to produce a fall of temperature of 2$\frac{1}{10}$° to 3$\frac{1}{10}$° in from six to nine hours.—*Journal de Médecine*, April 3d, 1887; *Med. News.*

Pills for Colds.—Dr. J. H. Whelan states that he has found a combination of belladonna, quinine, and arsenic almost specific in aborting common colds, if commenced in the early stage of the affection, while it is still confined to the nose and pharynx. The formula which he uses is the following:

Quininæ..... .....gr. xviij.
Liquoris arsenicalis.....℥ xij.
Liquoris atropinæ.....℥ i.
Extracti gentianæ.....gr. xx.
Pulveris gummi acaciæ, q. s.
Ut fiant pilulæ xii.

Sig. One every three, four, or six hours, according to circumstances.

Dr. Whelan states that at starting one pill should be taken every three or four hours, and later on six hours; and he believes that if a catarrhal subject has a box of these pills always at hand, he will almost invariably succeed in aborting a cold.—*Therapeutic Gazette.*

Lotion for Styes.—The *Medical Press* quotes Dr. Abadil as authority for a statement that:

Boric Acid..... 10 grammes
Distilled Water ....300 "

applied frequently to an eyelid which is the seat of a stye, will not only effect a rapid cure, but prevent recurrence of the trouble.

* Vinum Opii, U. S. Ph., is an equivalent of this preparation.

Iron With Sodium Salicylate.—A mixture known in the Jefferson Medical College Hospital as the Mistura Ferro-salicylata and recommended by Dr. S. Solis-Cohen in chronic rheumatic affections, is the following:

℞ Sodii salicylatis	ʒ iv.
Glycerini	fl. ℥ ij.
Ol. Gaultheriæ	♏ xx.
Tr. Ferri Chloridi	fl. ʒ iv.
Acidi Citrici	gr. x.
Liq. Ammonii Citrat. (Brit. Ph.), q. s. ad	fl. ℥ iv.

M.

The mixture is clear and not unpalatable, and the usual dose is 2 fl. drachms, in water, 3 to 4 times daily. *Med. and Surg. Rep.*

Formulas for Balsam of Copaiba.—For external use:

℞ Balsam. Copaivæ	2 parts.
Spirit. Juniperi	3 "
Spirit. Ætheris nitrosi	1 "

M. Sig. 30 drops 4 times daily.—SCHŒMANN.

An emulsion for injection:

℞ Balsam. Copaivæ	4 parts.
Sodii Carb. cryst	2 "
Aquæ q. s. ad	100 "

M. Sig. For injection.

This emulsion was originally a French prescription, but being a convenient and permanent emulsion has been widely used. It is commonly diluted with three parts water, when an intravesical injection is made; when excessive pain is present, a few drops of tincture of opium may be added.—JEANNEL.

℞ Balsam. Copaivæ, Extr. Cubebæ	āā ʒ 2½
Cubebæ pulv., Myrrh. pulv.	āā q. s.

Ft. pil. 50 in num. Coat with gelatin.

Sig. Two or three pills several times daily.—*Med. News.*

Picrate of Ammonium.—The following is a formula for the administration of this substance, which has been used in the treatment of malaria:

℞ Ammonii Picratis	gr. 4½ to gr. 24.
Pulv. Rad. Glycyrrhizæ	gr. 24.
Syrupi Glycyrrhizæ	♏ 24.

M. div. in pil. 30 in num.

It should be observed that the salts of picric acid, when mixed with dry substances, form explosive compounds, and a liquid should always be used in their combinations. — *Therapeutische Monatshefte.*

Ointment for Obstinate Acne.—The following is known as Wilkinson's ointment.

℞ Naphthol	ʒ 2½
Sulphur. præcipitat	ʒ 12½
Vaseline or lanoline, Potassium soap	āā ʒ 6½

M. ft. unguentum.

Sig. Local use daily.

—*Revue de Thérapeutique.*

Iodol in Dentistry.—For several years iodoform has been used in conjunction with eucalyptus oil for preparing carious teeth previous to stopping, and also in combination with wax as a temporary stopping. Its very unpleasant odor is, however, against it, and the recent introduction of *iodol* has been taken advantage of, and the new remedy is now gradually replacing iodoform in dental practice. Mr. Lloyd Williams gives the following formula (*Journ. Brit. Dent. Assoc.*):—

Iodolized Wax.

Paraffin	ʒ ij.
Spermaceti	ʒ ij.
Iodol	ʒ i.
Carmine	gr. i.
Yellow wax	ʒ iij.

Melt the waxes on a water-bath, and mix in the powders carefully and with constant stirring. Care should be taken not liberate the iodine by overheating, although iodol is not decomposed under a temperature of 212° Fah.

In using the wax, first of all dry out the canal with a saturated solution of iodol in chloroform, and having wrapped round a smooth Donaldson bristle with sufficient thin Japanese bibulous paper (which for this purpose is far preferable to cotton wool), apply a small quantity of the wax, and having gently heated over a spirit flame, so as to allow the paper plug to be soaked, the dressing is carried to the canal in a soft state, whilst the pulp chamber is filled with more wax, and sealed with the aid of a hot-air syringe. Iodol varnish is made by mixing 1 part of the saturated solution of iodol in absolute alcohol with 4 parts of negative varnish. This may be applied to remote canals by saturating Japanese paper with it instead of with the wax.—*Chem. and Drugg.*

Blue Ink for Stamps and Pads.—Dissolve 20 parts of borax in 200 parts of water, heat to boiling, and dissolve in it, at a boiling temperature, 20 parts of bleached shellac; dissolve 20 parts of gum arabic in 50 parts of water; with the latter solution mix intimately 10 to 20 parts of best ultramarine and add to the shellac solution when it is completed and has cooled off. Finally add enough water, if necessary, to make the total quantity of the water amount to 250 parts.—After *Der Fortschritt*, No. 9.

Marking Ink.

THE following modification of Redwood's formula for marking ink has recently been published by several exchanges. We quote from the *Chem. and Drugg.*:

Nitrate of Silver	3½ oz.
Sodium Bicarbonate	4½ "
Solution of Ammonia (s.g. 0.900)	3½ "
Tartaric Acid	9 dr.
Archil	1 oz.
Soluble Sap Green	1 "
Powdered Acacia	2½ "
Sugar	1½ "
Water	q.s.

Dissolve the silver and soda salts, each separately in 2 pints of boiling water, and mix the solutions. Allow the precipitate to settle, decant the fluid, and collect the precipitate on a paper filter, wash it with a pint of water, and, when drained, transfer it to a mortar; add the acid, and mix. When effervescence has ceased, add the ammonia solution, and transfer the whole to a bottle containing the sugar. Now dissolve the sap green in 4 oz. of water and the archil, by the aid of heat; add the acacia to the mixture, stir until dissolved, and strain. Add the ammoniacal solution to this, and make up to 20 oz. with water.

Solution of Terpin.

IF it is desired to administer terpin in form of a solution, this may be accomplished, according to Teillet (*Archives de Pharm.*, 1887, 149), by treating the terpin with so-called dulcified nitric acid or spirit of nitric acid and then diluting with water:

Terpin	1 part.
Spirit of Nitric Acid	6 parts.
Water	100 "

Spirit of Nitric Acid is the Acidum Nitricum Alcoholisatum of the French Pharmacopœia. It contains a certain amount of nitrite (and probably also nitrate) of ethyl. It is prepared by diluting 78 parts of nitric acid (sp. gr. 1.390 at 15° C.) with 22 parts of water, and adding the solution gradually to 300 parts of alcohol contained in a flask provided with a ground stopper. The stopper is to be loosened from time to time, during 2 or 3 days, in order to permit the generated gas to escape.

BIBLIOGRAPHY.

PLAN OF STUDY FOR THE ASSISTANT IN PHARMACY. By A. B. PRESCOTT, Ph. D., pp. 16, sm. 8vo.

THIS reprint from the proceedings of the Michigan Pharmaceutical Association is especially desirable by those who have occasion to prepare themselves for examination by Boards of Pharmacy acting under the various State laws. There is probably no one in the country better fitted than Professor Prescott to offer suggestions as to how best to direct reading and study with a view to meet the requirements of these boards, and the publication of such instruction is very timely.

A COMPANION TO THE UNITED STATES PHARMACOPŒIA. Being a Commentary on the Latest Edition of the Pharmacopœia and containing the descriptions, properties, uses, and doses of all official and numerous unofficial drugs and preparations in current use in the United States, etc. With over 650 original illustrations. By OSCAR OLDBERG, Pharm.D., and OTTO A. WALL, M.D., Ph.G. Second Revised Edition. New York: William Wood & Co., 1887, pp. 1,216, 8vo.

THIS work is one of the most convenient and popular of the various commentaries which have appeared since the publication of the revision of 1880. The materials for it have been newly prepared as regards both the text and and illustrations. Its contents cover the general needs of the student, the retailing pharmacist, and the physician, not only with respect to official articles, but also as regards a very large number of drugs and preparations in very common use.

DRUG ERUPTIONS. A Clinical Study of the Irritant Effects of Drugs upon the Skin. By PRINCE A. MORROW, A.M., M.D., etc., New York: William Wood & Co., 1887, pp. 199, 8vo.

IT is only since the study of skin diseases has been made a subject of special study (and that quite recently) that the effects of drugs as a cause of such disturbances has received attention to any extent. The amount of knowledge relating to this topic has, however, increased rapidly within a comparatively short time and is very thoroughly embraced in the present volume.

ELEMENTS OF BOTANY. By EDSON S. BASTIN, A.M., F.R.M.S., Professor of Botany, Materia Medica, and Microscopy in the Chicago College of Pharmacy. Chicago: G. P. Engelhard & Co., 1887, pp. xv. 282, 8vo, 459 illustrations, cloth, $2.50.

THE text of this work is divided into four parts, devoted to Organography, Vegetable Histology, Vegetable Physiology, and Vegetable Taxotomy, to which is appended a Glossary of Botanical Terms. Following each chapter of Part I. are a number of practical demonstrations which are excellently chosen and adapted to familiarize the student with plant structures. Throughout the work the subject is treated plainly and with care to render it comprehensible by those who have had no previous knowledge of the subject. There is an abundance of illustrations, many of which are the work of the author, and all are excellent. So far as possible, the author has made use, for purposes of illustration, of native and ready available plants, so that whoever adopts the work as a text-book will have little difficulty in pursuing the course of study laid before him in a manner far more satisfactory and profitable than would be the case with most of the text-books that have heretofore been available.

The author and publisher are to be congratulated upon the practical nature and beautiful appearance of the book.